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AUTOPLASTIC OVARIAN TRANSPLANTATION.

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Mrs. Nina A——, aet. 17 years, was admitted for her confinement to the Obstetric Department of the Women's Hospital on March 5th, 1911. She was not in labour; but because of her physical deformity, she was taken in for examination and observation.

She stated that she had suffered with hip and spinal disease for the past ten years, and had not walked except with the aid of crutches since she was a child of seven years of age. She had been regularly unwell up to May 15, 1910. Since then she had not menstruated.

Examination showed her right lower extremity to be twelve inches shorter than the left, and much atrophied; the hip joint was ankylosed, the thigh being flexed, and fixed in a position over the middle line. A tubercular sinus, discharging a lot of pus, was present over the right trochanter, and scars from healed sinuses were present over the lower lumbar vertebræ and right buttock. The size and appearance of the abdomen was consistent with that of a full-time pregnancy; the fœtus was alive, and was apparently smaller in size than the average, but yet there was not the slightest engagement of the head in the pelvic brim.

Examination per vaginam showed a generally contracted pelvis, especially in the conjugata vera, and the transverse diameter of the outlet, the latter barely admitting three fingers. The following are the measurements taken whilst the patient was under an anæsthetic:—

Distance between the iliac spines, 9¼ inches.
Distance between iliac crests, 10 inches.
Oblique conjugate, 3¾ inches; conjugata vera, 3 inches.
Intertrochanteric, 10¾ inches.
Distance between ischial tuberosities, 3 inches.

Comparing the size of the head with the diameters of the pelvis, it was obviously impossible to deliver the patient naturally, so after consultation, I decided to remove the child by Cæsarian section, and owing to the tubercular condition of the patient and her physical deformities, to sterilize her by transplanting her ovaries. As it was now 294 days since her last menstruation (the commencement of it), I decided not to wait for the onset of labour, but to operate at once; so on March 7, 1911, I delivered her by Cæsarian section* of a full-time female child, weighing 6lbs., and measuring 19 inches long, and in order to prevent further conception, transplanted her ovaries into her anterior abdominal wall.

The method of this latter procedure was as follows:—The ovaries were excised in the usual way, and were immediately placed in normal saline solution at 98.4°F.; each ovary was then incompletely divided longitudinally through its hilum, and as much ovarian stroma as possible was cut away with curved scissors, the reason for doing this being that the transplanted ovary degenerates in an amount directly proportional to its thickness and density; and by sacrificing the fibrous stroma the remainder is more easily permeated by nutrient fluid, therefore less degeneration occurs, and more of the egg-bearing part may be saved. Having thus prepared each ovary under saline, I next separated the sheath from the anterior surface of the left rectus muscle, until the outer border of that muscle was quite free. I then fixed with a few catgut sutures the surface of the incompletely divided left ovary, on the muscle border, in such a manner as to form a sandwich with it. The cut surface of the right ovary was placed on the right external abdominal oblique muscle, being fixed in position with catgut ligatures, about two inches from the middle line, where the muscle is situated close under the skin.

Subsequent history.—The patient made an uninterrupted recovery, and left the hospital 22 days after the operation, proceeding with her baby to her home in the country.

The child suckled* the breast for nearly five months, i.e., from March 6, 1911, to the first week in August, 1911, when lactation was discontinued. On September 24, 1911, the first menstruation appeared, which was quite painless, and lasted only three days, and was moderate in amount. The patient, writing soon afterwards, stated that she "never felt better in her life."

She continued to menstruate fairly regularly every month, sometimes not going the full 28 days, sometimes going longer, the duration being three to four days; the flow was always moderate, and was usually quite painless, but sometimes she knew when she was going to be unwell by tenderness in one or the other grafted ovaries, and most often in the subcutaneous one. She thinks the ovary swells a little on these occasions. The tenderness is increased on pressure, and is immediately relieved when the flow commences.

On September 6, 1914, three and a half years after the operation, I had the opportunity of examining the patient. The subcutaneous graft could be felt quite easily, and on it being palpated, the patient experienced a sickening sensation. The left ovary, which was placed more deeply in the left rectal sheath, could not be palpated definitely, but a spot could be found, which on pressure caused a sicken-

* I was assisted in this operation by Drs. R. Tate Sutherland and Edward White.

* Knowing the profound influence that lactation exerts on the physiology of the reproductive organs of the female, the question here arose, What would be its result on these grafted ovaries? After much consideration it was decided to allow lactation to take its course. I am indebted to Professor Osborne for valuable advice on this matter.

ing sensation, similar to that on the right side. This "sickening" sensation, and the occasional pain on menstruation is interesting, as it seems to indicate the development of nerves in the graft similar to the development of blood vessels,[1] which are known to occur. In general appearance the patient looked exceedingly well; the uterus was normal in size; there were no symptoms of the menopause.

Remarks.—Before attempting this operation of grafting the ovaries of a human being, I first of all satisfied myself that it could be done experimentally† in the laboratory. In 1908, and 1909, I transplanted the ovaries[1] of a fox terrier bitch, in exactly the same manner as in this case which I have just recorded. The bitch was kept under observation for 370 days, during which time it displayed at intervals all the phenomena of sexual heat, and menstruated in a perfectly normal manner. I then removed the grafts for histological examination. Although the subcutaneous one had, for some unknown reason, undergone colloid degeneration, the one which was placed deeply in the rectal sheath showed by the great number of Graafian follicles present, that it was not only developing them in abundance, but that it had the potential energy to do so for a considerable time to come. As these grafted ovaries appeared then to carry on their function in an apparently normal manner, therefore it was reasonable, by analogy, to hope that similar results would follow the transplantation of ovaries in the human being; and after careful enquiry into the sexual life of this case, extending over a period of 3½ years, the results obtained seem to justify the assumption.

Menstruation was held in abeyance by lactation for nearly five months, and on cessation of the suckling appeared, and has persisted in resonable regularity and duration ever since (over three years). Beyond a little transient pain, which occasionally precedes menstruation, the patient has no discomfort, and there was no serious deviation from the normal whatever. Such results, then, ought to attract the attention of every gynæcologist; for they clearly show that, by this procedure of transplantation of the ovaries, he has the power in certain cases of double oophorectomy, to obviate an artificial climacteric, with its unpleasant train of symptoms.

Comments on Autoplastic Ovarian Transplantation.

The results obtained from this case, and the clinical records of others which have appeared since my original paper was published,(1) together with laboratory experiments in the lower animals, suggest the following considerations with regard to the operation of ovarian grafting:—

(1) In order that any ovary, or part of an ovary, may be transplanted successfully, it is essential that:—

The whole of both ovaries should be excised from their original position.

If, in any case of double oophorectomy with grafting, the smallest part of one ovary is incompletely removed, the remnant will rapidly hypertrophy and control the sexual life, whilst the graft may be treated as a foreign body, and undergo degeneration and subsequent absorption.

This is well shown in my original paper[1] in Exper. 7 and 8. In one case (Exper. 7) a rabbit 129 days after the grafting operation gave birth to a family of four young ones, and in the other case (Exper. 8), 173 days after, gave birth to a family of two, and 26 days later to a premature family of four. I naturally thought that the grafted ovaries had provided the Graafian follicles for the pregnancies, but abdominal section revealed in each of them an ovarian remnant (so small at the time of operation as to escape observation), which had hypertrophied to about the size of a quarter of a split pea; and this had given rise to the follicles which had produced the fœtations. The grafts had entirely disappeared, their situations being indicated by a slight fibrous scar and silk ligatures.

The extent to which a remnant will hypertrophy, is well shown by Carmichael and Marshall.[2] One-fifth only of an ovary was left in the normal situation; six months later it weighed 0.37 gram, i.e., larger than the average weight of a normal adult ovary.

This inherent ability of the remnant to hypertrophy and maintain the ovarian function is the most probable explanation of pregnancy occurring in a patient who had undergone the operation of double oophorectomy.

(2) There is some evidence in favour of the possibility that a small graft will itself undergo compensatory hypertrophy similar to that of an ovarian remnant.

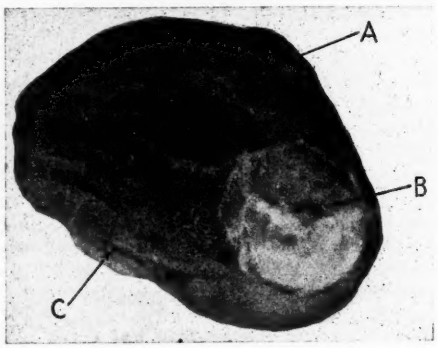

FIG. 3 (Magnified about 2 diameters).
Hypertrophy of an ovarian graft, on a rabbit's kidney.
A. Convex surface of the kidney.
B. Ovarian graft.
C. Hilum of the kidney.

Figure 3 shows where one-third of an ovary was grafted on to a kidney after double oophorectomy; afterwards nephrectomy was done, and the graft was seen to have increased to about twice its original size. This possibility is important to remember in those cases of double ovarian disease, where only a small piece of ovarian tissue can be obtained for transplantation.

† I am indebted to Professor Osborne, of the Physiological Department at the University of Melbourne, for the use of his laboratory to carry out these experiments.

The amount of hypertrophy that would occur either in a graft or in an ovarian remnant, would probably vary considerably in each individual case. It would be proportional to the quality of sex; that is, the amount of secreting tissue necessary to adjust the physiological balance of the individual permanently.

Some degeneration may occur in grafts. If so, its extent will depend on the following conditions:—

(a) It will be directly proportional to the thickness and density of the grafts.

(b) It will be inversely proportional to the vascularity of the tissues on which the graft is placed.

(a) This is readily understood, as the graft, having no blood supply at first, is entirely dependent for its nutrition on the transudation of fluid from the lymph spaces; if the graft is a thick one (say of a whole undivided ovary), whilst its periphery obtains abundance of nourishment, and thus retains its vitality intact, its deeper tissues have their nutrition impaired, and its deepest, or central ones, getting little or no nourishment swell up with fatty degeneration, and form a structureless mass, which ultimately becomes absorbed.

If the graft consists of, or is obtained from, a cirrhotic ovary, the dense fibrous tissue would impede transudation of the nutrient fluid, with similar results.

In order to obviate degeneration of the graft as much as possible, the incomplete division of the ovary through its hilum is advocated, followed by a reduction of the thickness of the graft by cutting away the bulk of the stroma with scissors, leaving sufficient for the future development of the egg nests, and subsequent Graafian follicles.

Carmichael recommends cutting the grafts in pieces, forming the so-called "seedling grafts," which practice was followed by Whitehouse in his recently reported case.[3]

(b) Experimentally it has been found that transplantations on to non-vascular areas, such as peritoneum, subcutaneous tissue, aponeurosis of muscle, etc., invariably undergo a certain amount of degeneration, whereas grafts placed on more vascular situations, such as muscle, kidney, spleen, etc., show little, if any. The difference between these situations is one of the amount of nourishment supplied to the graft. In the non-vascular sites, there is only sufficient nutrient fluid present to maintain the vitality of the peripheral tissues, whereas in the vascular sites, there is sufficient to permeate completely through the graft and maintain the vitality of the whole of it. Vascular union is much more quickly effected under these conditions.

These considerations will explain the different opinions expressed by experimenters, some of whom say that "a portion of a grafted ovary always dies," whilst others maintain that "it is possible to graft an entire ovary without any part of it dying," whereas in all probability the presence or absence of degeneration in a graft depends entirely on the conditions described above.

(3) The site of transplantation is a matter of considerable importance, and several factors have to be considered in every case before it can be decided where the graft can be put.

The first point to be settled is, is it to be placed inside or outside the peritoneal cavity? Generally speaking, if the case is a clean one, and if the ovarian tissue is free from all suspicion, the intra-peritoneal situation should be chosen, particularly if the patient is young, if tubes and uterus are present, and if reproduction of the species is desired; because with healthy ovarian tissue, there is little risk of complication, there is also less risk of injury to the graft, or of irritation from pressure of clothes, movements of the body, etc., and if they should become painful at menstruation, better protection is afforded. If on the other hand, the case is not a clean one, and the grafts are likely to be infected with pus germs, or if cystic disease may be expected to develop, or if there is any possible malignant implication, then the extra-peritoneal situation should be chosen, because any impending trouble would be recognized early, and diagnosed easily, and its treatment or removal would be but a small matter.

One or the other of these situations having thus been selected, the next point to consider is, on what tissues should the graft be placed? In (A) intraperitoneal transplantations, it appears at first sight that there is not a great variety of tissues on which to place the grafts, as peritoneum lines the cavity everywhere and covers all the organs; and although peritoneum will do in every case, yet because of its poor blood supply, it is not the best of tissues on which to place a graft. The same remarks apply to broad ligaments, and also to sites distal to ligatured arteries, as in transplanting on to the site of the ovary after the ovarian artery has been tied. A little consideration, however, shows that at certain points in the abdomen increased blood supply can be obtained through the peritoneum from adjacent tissues. Examples of this are as follows:—

(i.) The uterus. It is exceedingly vascular, through direct and anastomotic blood supply; it would afford anywhere on its surface abundant nourishment for a graft; inasmuch as this organ is mobile and adaptable to altered abdominal tension, its situation in the pelvis is essentially suitable for the purpose; and if the graft were placed on the postero-lateral margin, beneath the tubo-uterine angle, it would be in close proximity to the normal ovarian situation.

(ii.) The posterior surface of the rectus muscle below the semilunar fold of Douglas.—In this situation the graft is separated only by peritoneum and transversalis fascia from the rectus muscle, which is rendered exceedingly vascular by the deep epigastric artery and its anastomoses. Other muscular sites could also be obtained, but they are neither so suitable nor so convenient.

(iii.) Experimentally transplantations have been made on to kidneys and spleen.[1] They provide ideal sites, but grafting on to such vital organs in the human being may be regarded at present as somewhat extreme.

Thus, an intraperitoneal graft may be placed anywhere on the peritoneum, but its vitality will be greater if it is placed on a site where it can obtain

increased nourishment from a subjacent vascular tissue, such as uterus or muscle. Care should be taken that the cut surface of the ovary is securely fixed on the site of transplantation, and that the epithelial surface projects free into the abdominal cavity; this arrangement simulates the normal and prevents the formation of adventitious tissue around the Graafian follicles, and consequently facilitates their rupture.

(B)—If an extra-peritoneal situation is decided on, the foregoing remarks regarding the vitality of the graft are equally applicable; therefore a situation affording a good blood supply should be chosen, and because of the superficial position of the graft extra care should be exercised to secure for it as much protection as possible, from injury, from pressure of clothes and movements of the body.

Extra-peritoneal transplantations may be grown on:—

(i.) Subcutaneous tissue anywhere; but this, like the peritoneum, is poorly supplied with blood, and unless the precaution is taken to anchor the graft to subjacent vascular tissue, much degeneration will occur.

(ii.) The external abdominal oblique muscle.—The muscular part of this muscle, because of its vascularity, should be chosen rather than the aponeurotic part. It has the advantage of being easy of access; but its superficial position would tend to cause discomfort to the patient by pressure of clothes, etc., especially if the ovary at any time should become tender or painful. The graft could be placed in the cellular space between the muscular part of the external oblique and internal oblique muscles, or even between the latter and the transversalis abdominalis muscle; the selection of the latter site might necessitate another incision, which under certain circumstances would be quite justifiable.

(iii.) The rectus abdominalis muscle.—After much experiment* in the laboratory this situation was considered to be the most suitable and satisfactory for extra-peritoneal grafts, being, as it usually is, in the situation of the abdominal wound; it is therefore most convenient. The muscle is exceedingly vascular, and varying degrees of depth can be obtained for the protection of the graft. Thus the graft may be placed (subcutaneously) on the anterior wall of the sheath, through which it would draw its blood supply. The wall may be "buttonholed" to facilitate the development of blood vessels through it; or it may be placed on the anterior surface of the muscle, within the sheath, or on either border, or on its posterior surface, where it would be as near to the peritoneal cavity as it could be, without being intra-peritoneal. In this latter situation it would be separated from the cavity only by transversalis fascia and peritoneum, so any temporary swelling of Graafian follicles could project toward the abdominal cavity, and thus minimize any discomfort to the patient.

(iv.) Experimentally grafts have been grown on intercostal muscles, and the periosteum of ribs. In the latter situation the ovary was found to lie snugly between the ribs, and was afforded protection by them.

* These experiments were carried out during the early part of 1909.

REFERENCES TO LITERATURE.

(1) "Australian Medical Journal," Vol. 15; No. 12, December 20, 1910.
(2) "Journal of Physiology," Vol. 36; No. 6, February, 1908.
(3) "British Medical Journal," No. 2752, September 27, 1913.

I am indebted to the Histological Department of the University of Melbourne, under the direction of the late Rev. W. Fielder, for the preparation of the microscopic sections, and to Mr. W. J. Owens, for the microphotography.

GROWTH, DEVELOPMENT AND VARIATION.

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Four great names in connexion with the evolution of organic beings or the origin of species, or the progressive development of plants and animals, are Lamarck, Darwin, Weissmann and Mendel.

Lamarck attributed variation and the development of the species to the effect of the surroundings, or the direct action of the physical conditions of life and to the effects of use and disuse, or, in other words, to habits.

Darwin was convinced that natural selection was the chief but not the exclusive means of the modification of organic beings, and allowed some, if only a small, influence to habits or the effects of use and disuse.

Weissmann supported Darwin, and, moreover, demonstrated the continuity of the germ plasm and the independence of the germinal tissues of the body tissues, and maintained that as acquired properties could not be transmitted, the effect of the surroundings and of use and disuse had no influence on the variation and development of organic beings.

Mendel demonstrated that variations (and all development depends on variations) occurred in plants as the result of definite capacities or factors contained within the seeds or germinal tissues, and that these were capable of segregation and appeared in the progeny in definite mathematical ratios.

Bateson, who is a follower of Mendel, recently put forward the tentative view that there can be no variation without a loss, and that development is a breaking-down rather than a building-up; that evolution is an unfolding from a more complex, if less definite, organization to a simpler, if still complex, form.

Lamarck's doctrines at first held sway, but were subsequently overshadowed by Darwin's views. Weissmannism seemed to make Lamarckism an impossibility, and biologists became ultra-Darwinists. Mendelism has caused a scepticism of the all-sufficiency of Darwinism, and caused an unconscious swing back to Lamarckism.

These doctrines, while they all bear the imprint of truth, are more or less opposed to each other, and none of them are all-sufficing.

Lamarck's doctrine of the influence of environment and use and disuse in producing the remarkable adaptation to their surroundings that is universally admitted to exist in the myriad forms of life is the simplest to believe, but takes no cognis-

ance of the continuity of the germinal tissues, and fails to show how properties acquired by the body can be transmitted by the independent reproductive parts.

Darwinism, or the theory of natural selection, has been shown by its author to be so obvious in so many instances that none can doubt its great importance, but it fails to account for the origin of variation, and there is much truth in what Samuel Butler said, namely: "The origin of variation is the only origin of species." Moreover, one feels that it often has to be strained to account for all the facts. Even Weissmann, who is an ultra-Darwinist, has to admit that "the variation required has, in the majority of cases, presented itself." To get over this difficulty, Weissmann formulated his doctrine of selection within the germ-plasm—germinal selection. This involved another theory, that the various parts of the adult were represented in the germ-plasm (id) by minute particles (determinants). The objection to Weissmann is that he only puts the problem of variation back a stage, for his germinal selection is still a chance one, depending on one of his hypothetical determinants getting an accidental increase of nutriment. Still, none can doubt the truth of the continuity of the germ-plasm and the necessity of variations arising in the germinal tissue.

Mendel has shown that the germ-plasm may have within it definite and separatable capacities (factors) for the development of distinct characters. Mendelism does not deal with origins, and therefore at present carries us no further.

Bateson's idea that there cannot be a variation without a loss, and that the development of organic beings has been an unfolding from the more complex to the simpler appeals to me strongly, as will become evident later on. What I propose to do is to show that Lamarckism is not opposed to Weissmannism, that it gives the direction to the variation that natural selection operates on and that it is not incompatible with Mendelism. It has appeared to me lately that Lamarckism would receive much more support among biologists if it could be shown how the effects of use and disuse could be transmitted; in more definite words, how changes in the body parts could induce an impulse to similar changes in the reproductive parts, so as to make them hereditary. I hope to show that it is possible.

It will be necessary as a preliminary to discuss briefly growth, development, variation, and "factors," or separatable capacities for the development of definite characters in the seed or germinal substance.

Growth and development are separate processes. They usually go on together, and are therefore apt to be confused. Man grows and develops, but one part of man, namely, his germinal part, grows without developing, or at most developing at an imperceptible rate. Growth uncomplicated by development, variation, or unfolding, is best seen in unicellular organisms. A single bacterium, given suitable pabulum and surroundings, can grow in a short time into a huge colony. In fact its capacity for growth is only limited by its surroundings. Yet these organisms show little disposition to change. The plague bacillus, there is evidence to show, existed with some of its present activies 4000 years ago. The typhoid bacillus has been cultured for years without developing any material change. The germs of diphtheria or smallpox, when introduced into a community by a single case may attack the inhabitants widely, and become permanently established, to go on multiplying almost indefinitely. All of which are examples of the capacity of organisms to grow. That these tiny organisms tend to occur in groups with many features in common suggesting a common origin, and that they do sometimes exhibit variation as when an infectious germ permanently loses its virulence, need not detain us now.

In these lowly living things growth and reproduction are identical processes, for each as it grows divides, but in higher beings the organism consists of two parts, the individual or body part, and the germinal or reproductive part. The germinal part goes on growing without or with little change, and providing circumstances are favourable may grow perpetually through successive generations. The body part also grows, but as it does so, changes. From a small collection of little differentiated cells it changes into a large body, consisting of elaborate organs, each with highly specialized cells. These cells are the essential parts of the individual, and each is the descendant of the original fertilized ovum. As they develop, however, each in a special direction, they lose their power to grow. Their differentiation is a gradual progress towards extinction. So far then it appears that growth and development are different processes, and to an extent antagonistic.

A few words may be interpolated here on the nature of growth. The essential factor in growth is the assimilation of food and the turning of it into living matter of a character identical with the organism. This involves a breaking down and a building up, and this is done by means of ferments. The more vital processes are studied the more they seem to depend on ferments. The special feature of ferments is their apparent unlimited capacity to perform their function so long as they are freed of their products. It is probably this function which gives the growing cell or organism its unlimited capacity for the work of reproducing itself. I have formed the opinion that the ferment is the final stage in the development of the living molecule, the proper and ultimate end of the live particles. The ferment functionates without undergoing wear and tear. It has the property of living matter, but itself neither lives nor dies, and in that sense is immortal, even though it can be destroyed by heat. Germinal tissue, or the germ plasm of Weissmann, is spoken of as being immortal, and as already hinted at, it probably owes that to the unique properties of its ferments.

We shall now consider development in living things. There can be no serious dispute that all organic beings, however exalted and complex, have arisen by a process of development from simple forms, and that the steps by which this has been done can be traced in the gradation of forms

of plants and animals—comparative biology—and in the changes that take place in the individual as it evolves—embryology. I propose to limit myself to one stage of the subject, and to show that in the development of living beings there has been an unrolment from highly complex but undifferentiated forms to simpler but more specified forms, and all development implies a loss of vital intensity.

It is necessary to be clear on one point, namely, that higher forms of life have not developed from lower forms, though they may have developed through them. The relationship between the lower and higher forms of life existing to-day is not one of direct descent, but of divergence from a common ancestor. Man has not developed from monkeys, but both from a common ancestor. Mammals have not come direct from amphibians, but both again from a common source. The different species and breeds of the domestic animals and plants can each be traced back towards, if not to, a common origin. Looked back upon in this way all development is seen to have been divergent. The higher forms existed at one time in biological history as simpler forms. This signifies that they have passed through these forms, but not that they have developed from them. In the upward climb of organic beings development into specialized forms has meant a loss of position or potentiality in the scale. That this loss has been a real material loss there can be no doubt. For instance, dog and man have had a common parent, but man has powers and capabilities and the structures to express them, which the dog has not. The dog in his development has lost characteristics and powers which man has retained. The same may be said of any animal when compared with one higher in the scale, always there is a loss of vital capacity. Professor Bateson says we have no evidence of a variation in organic beings without a loss, and it is difficult to imagine that it could be otherwise. But we should remember when we speak of the loss of an hereditary character that we are referring to the germinal tissue, and not to the body, for the body is probably never a full expression of the germinal tissue from which it sprang, and part of which it carries. For instance, in the geological era, when fish forms represented the highest forms of life, there was clearly somewhere in the germinal tissues of the then existing forms the potentiality of mammalian development. It might be said that we have overlooked the possibility that progressive development is due to the organism acquiring by addition new capacities. Such is highly improbable and inconceivable except under occult influences. Professor Dendy recently attempted to show that organisms might progressively develop by learning, and suggested that the first lesson was in the utilization of food, the effect of which was to give them a better start in life The act of learning, however, is an expression of an inherent faculty. It adds nothing, but realizes a potentiality. It is a development a variation, a divergence, and is probably like all other development, accompanied by a loss, say, of intensive molecular movement. Moreover, the idea of progressive development by additions is negatived by what takes place in the evolution of the embryo. Here we can see the daughter cells, each the direct descendant of the fertilized ovum, losing their capacities in different degrees as they take up their positions, and realize their functions. The cells of the first division have the potentialities of all the subsequent divisions. As they severally develop they lose their power to change except in one direction, epithelial cell into epithelial cell, blood cell into blood cell, and so on, then they lose their power to divide, and when they have reached their full development, and performed their final function cease to live. There can scarcely be any doubt that the embryo as it unrolls itself is expressing the potentiality of the fertilized ovum, that nothing is added, and that there are losses going on all the time. So, without multiplying our instances, it appears that development in organic beings always implies a loss of vital capacity.

We have now to consider variation. By this term is meant the differences manifested in the character of the offspring from those of the parent. Variation has come to be recognized as the essential element in the development of organic beings. All the diverse forms of life existing on the earth to-day, and the many others that have existed, owe their special characters primarily to variations from their common ancestors. Again, the multitudinous forms of cells that make up the body of a higher animal are all the result of variations from a mother cell. Just now I merely wish to show that it is probable, if not provable, that the surroundings or environment have been the cause of variations, and later shall show how they could have imparted a direction to them.

In the first place, if we survey the facts of organic development in perspective we perceive two things, a capacity for variation that results in adaptation, and a very definite resistance, or reluctance to suffer change. The former is exemplified in the evolution of organic beings that is everywhere apparent. The latter is shown: (1) In the remarkable permanency of existing forms of life. As regards unicellular organisms this has already been referred to. Further, when we attempt to trace any existing form back to its origin we get lost in the dim and distant past, so much so that when Lotsy boldly declares that all variations are due to intercrossing, he is received with sympathy, and when Bateson hints that variations may be due to the unpacking and repacking of existing complexes he is hard to disprove. (2) In the contemplation of the hereditary defensive structures that organism have acquired against external influences; and (3) in the fact that in individual development there is always a part—the germ plasm—that resists change from generation to generation. It is a fair inference from the above that changes have come about under compelling influences; in other words, that variation has been a necessity rather than a virtue on the part of the organism.

In the next place, the remarkable adaptability of organisms to their surroundings suggests a response to their environment. The theory of natural selection explains many of the facts, but not all of

them. Moreover, it offers no explanation of the origin of variation, and assumes an indefinite and unlimited variability. Again, it does not show how a variation is selected at its inception before a selective value is fully present. Darwin himself said in 1876, that is two years after the appearance of the second edition of "The Descent of Man": "In my opinion the greatest error which I have committed has been not allowing sufficient weight to the direct action of the environment, i.e., food, climate, etc., independently of natural selection." Bateson, in "Darwin and Modern Science," says: "The abundance of adaptation, we all grant, is an immense, almost an unsurpassable, difficulty in all non-Lamarckian views of evolution." Lastly, the analogy of embryonic development markedly suggests environmental influences. The various types of cells in the body under the influence of position show no hesitation, or indefinite, and unlimited variation, but go straight to their different goals.

I shall now refer to factors. Mendel's facts may be stated thus: Tall pea-plants and short pea-plants, each breeding true, when crossed yield tall plants. These, however, when allowed to self-fertilize reproduce in the proportion of three tall and one short. Of these again on self-fertilization, one tall plant breeds true, the short variety breeds true, but the other two act like the first crossbred, and yield three tall and one short plant. Mendel's hypothesis is that the factors tallness and non-tallness are represented in the germ cells, but are segregated in them, so that each is present in a separate germ cell. Thus, after the first cross the germ cells containing the factor for tallness would be equal in number to those containing the factor for shortness, and by the law of chance, on coming together would yield plants consisting, one of two tall elements, one of two short elements, and two of one of each element. Since the crossbred plant—that is, the one containing both factors—is always tall, tallness is said to be the dominant factor, and the other is called the recessive.

The facts have been found to apply to other characters in plants and animals, and, generally speaking, the hypothesis has been found to work.

Mendel and his followers have made it certain that the germ cells of organisms contain factors for the production of specific characters, that segregation of factors takes place in the germ cells, and, further, that in considering inheritance factors may be regarded as units.

I am not sure, however, that the term factor is a good one, as it is apt to give too much the impression of rigidity. Every germ cell has a strong bias to develop in a certain general direction, and has also bias, while conforming to a general type, to develop special characteristics. This means that, given the proper environment or succession of environments, every germ cell is so far biased that it will develop in a certain way. This does not imply absolute rigidity. The segregation of factors may account for variations in the offspring, but the characters arising from similar factors vary perceptibly. The factor, though it has some definiteness, is still a live, and therefore plastic, substance. For instance, the semitic cast of countenance is said to be the result of a factor, but no two similar faces or even single features are quite alike, and to imagine that a separate factor is created for each individual is difficult. Moreover, must not the factors themselves have developed by variation from some things less definite?

Another question is, what is the nature of dominance in factors? Whenever D (dominance) and R (recessive) meet to form an organism it is always the D factor that prevails. It appears to me all the known facts could be explained if D were regarded as plus and R as minus, that is to say, that R does not represent a character, but the absence of it. Professor Bateson appears to incline to such a view. I have not seen it discussed what would happen if two dominant but opposite factors met in an organism. They probably could not unite, and it may be that this is the explanation of the failure of intercrossing between species. In varieties and sub-species there is a general bias in one direction, and special characters might well owe their differences to plus and minus influences, but in different species there are opposing tendencies of structure and function incompatible with each other.

I now wish to show how influences affecting the body may and probably do reach the germ plasm, and induce changes or variations in it. The relationship between the body and germinal tissues is a very close one. We are apt to think of the germinal tissues as being portion of the body, as belonging to the body, whereas biologically the body or soma is a portion of the germ plasm, belongs to it, and as we shall see is largely under its influence. In one sense the body is a mechanism manufactured and used by the germ-plasm to enable it to continue its immortal existence. This of course is not all the truth, for the body is the expression of the capacity of the germ plasm, a capacity which may have other purposes than reproduction.

If we take the human organism as an example, we find that there are besides the glands that directly give rise to the germ cells, a number of glands, the adrenal gland, the thyroid gland, the pituitary body, the thymus, and perhaps some others which, while they control the growth and functions of the body, are closely related to the reproductive organs, so much so that they must be looked upon as part of the reproductive system. That influences reach the germ-plasm from the body is clear. The reproductive tissues directly or through closely related glands, exert a positive influence on the growth and functions of the body, and this must be done in response to the needs of the body. Sexual differences are known to be called forth by the germinal tissues, and sexual differences exist in the embryo long before it is born, hence at a very early date in the differentiation of the reproductive system there is a call and a response between the soma and germ-plasm. We may surmise here as a preliminary, that if a call or a stimulus be persistently made and responded to by the germ-plasm sufficiently often, that in time the germ-plasm would assume a permanent

bias in the direction of responding to that call. We might refer to the analogy of the cells of the body. These can be trained in certain directions. For instance a bias can be given to the brain cells in learning, to the functional activity of certain glands, or to certain tissues in the production of immunity against disease. Now the bias thus induced may last throughout the life of the individual, but the cells renew themselves frequently (a fact which is any way sure as regard secreting tissues and certain mother tissues, such as the blood-producing cells, the skin or interstitial tissues). Hence we have within the body an example of properties acquired by cells being transmitted, even though it be only during the life of the individual.

There is, therefore, a certainty that the reproductive system controls, i.e., reinforces and inhibits, the activities and functions of the body to a large extent. Nervous tissue is influenced to some extent by the accessory reproductive glands: witness the relation between tetany and the parathyroids; the mental sluggishness in thyroid insufficiency, and so on; but generally speaking the nervous system is not directly controlled by these glands. In fact it has some of the attributes of the ductless glands, namely the control of nutrition. It were easy to show, however, that during sexual life (which includes in some way or other the whole of life) influences continually pass from the nervous system to the reproductive glands, and vice versa. Let us say, for example, that in a primitive state the sense of smell were found useful in the activities preliminary to mating. The impulse to use the sense would come from the germinal tissues. The effort to use it and the continued use of it would lead to a further reinforcement from the same source. In this way in time, through successive generations, a bias or a factor for a keen sense of smell would be generated in the germ plasm. At the same time, and in the same way an impulse to a structural adaptation would arise. This case assumes a sense of smell already present, but by taking the argument back to the very origin of the differentiation of the sense it would apply.

Let the argument be extended to all the activities and functions connected directly or remotely with reproduction, and the hereditary effect of use or habits in the production of varieties would, without contravening Weissmann's continuity of the germ plasm, be conceivable.

The effect of disuse needs a special reference. If the factor were strongly established, on disuse, it would persist; but if it were less strongly established it would recede owing to inhibiting forces still being present. Should the character disappear it would be the result of the complete loss of the factor in segregation, or of the extinction of the animal. This would explain why useless organs persist sometimes in a fully developed form, sometimes in a rudimentary form, and why they are sometimes altogether absent.

This modified Lamarckism would explain the origin of adaptive varieties, and how it comes about that there is always the right variation for natural selection to operate on. It would also explain correlated variation, for the factor operated on is a general tendency and not a rigid unit. It would also explain co-aptation, as when the whole muscular forefront of the stag becomes increased to support its huge antlers, since the call and response would be in accord with the needs of the organism. If we agree that the effects of habits can reach the germ-plasm then it is easy to understand that effects may be produced by climate and other conditions. Habits are largely conditioned by the surroundings, Moreover, it has been shown that exposure to X-rays may destroy germinal tissue, and that being so why should not lesser rays induce changes without death. To take an example: can there be any doubt that the Australian merino sheep is a variation induced by the Australian climate. It is true that selection has done much to bring the merino to its present state of perfection. But before the selection began the tendency to the light frame and fine wool of the breed showed itself. The Mendelians might reply that the merino quality was a hidden character that appeared fortuitously. That the factor or bias was there I would not deny, but that the climate further developed it I feel sure, for the tendency has been a wide-spread and not an isolated one in Australia.

I shall not refer in detail to the application of my ideas to plants, for the reason that my knowledge of botany is limited. But in their instance the case seems to me to be simpler. The germ-plasm in plants is said to reside in the subepithelial layer of the pericarp, and is therefore in much closer relationship with the soma than is the case in animals.

The chief difficulty in proving my theory lies in the permanence of present-day forms of life. But the same difficulty confronts the theory of natural selection. The permanence of forms of life, however, need not be wondered at. I have previously mentioned that the resistance to change is a marked characteristic of living things, and that what change does take place is of a protective kind. There is, therefore, a natural tendency to permanence of form. Further, if there were not this tendency the very nature of development would lead to rapid extinction. Moreover, the environment or external forces to which organism are exposed are much the same to-day as they were ages ago. The problem of the future, I venture to predict, will be not how do the surroundings induce hereditary changes in organic beings, but how is it that they do not induce greater and more rapid changes than they do.

One last word is necessary. I have spoken of influences passing between the soma and germ-plasm. Do we know the nature of those influences? In the case of those ductless glands that I have regarded as accessory reproductive glands the tissues are influenced by complex chemical compounds known as hormones. Each gland produces one or more specific hormones. I see no reason why the germ-plasm should not be regarded as a very complex gland, capable of producing a great variety of hormones, nor why certain units, to wit the factors, should not produce hormones having definite actions as regards function and structure,

In conclusion, I would like to say that I agree with Professor Bateson when he says that observation and experiment are, in the present state of our knowledge, more needed for the elucidation of the problems of heredity than theory. At the same time I think a general review of the subject such as I have attempted is justifiable if only for the purpose of forming a working hypothesis, and to indicate directions for research.

Reports of Cases.

TWO CASES OF INTENSE PAIN IN THE NECK, ASSOCIATED WITH ACETONURIA.

By **H. S. Maw, L.S.A. (London),**
Tumbarumba N.S.W.

This year I have seen two patients, both middle-aged, women, who were complaining of agonizing pain in the back of the head and neck. The first was an alcoholic, who had a filthy tongue, and other symptoms of gastritis, and the odour of whose breath suggested acetone. The second case, seen only a few days ago, was that of a lactating woman, otherwise quite healthy, and of excellent habits, whose urine contained a considerable amount of albumin (detected by heat), and as in the previous case, gave an intense reaction to the usual test for di-acetic acid.

Both patients improved rapidly under alkalies; in the second case the albumin disappeared from the urine.

I think these cases may be worth recording, as I have nowhere read of such a symptom-complex, and the first diagnosis was probably a lucky one.

In both cases the pain appeared to be wholly in the ligamentum nuchae, and its attachments; in the first case there was a little swelling and thickening, with slight redness; in the other none, though there was tenderness on pressure in both.

The most striking clinical feature of these two cases was the undoubtedly agonizing pain. Both women declared they were going mad. There was very little local disturbance to account for the pain, and this was emphasized by the way in which they both held their heads, as immovable as possible, looking like cases of spinal caries, or of wry-necks without the "wry."

The only drug to give relief to the pain was morphine or omnopon, though in the first case I tried nearly every anodyne in the Pharmacopœia. In the first case the temperature was very slightly raised to 99°; in the second not at all.

The association of acetone, aceto-acetic acid, and beta oxybutyric acid with pathological conditions is well recognized. Apart from diabetes mellitus these substances are found in the urine of persons suffering from acute febrile infections and some intestinal intoxications. The significance of the appearance is not clear, although it is highly probable that the physiological dissociation of the oxybutyric acid into its unstable acetic product, and acetone is inhibited by the indirect action of certain bacteria, especially cocci. Both indol and the diazzo compounds are materially increased in the tissues and in the urine under the action of bacteria on protein. This is especially marked in febrile affections and in infective conditions involving the intestines. The mechanism leading to the appearance of butyric and di-acetic acids in the tissues and urine in abnormal quantities is probably the same as in the case of indol. It appears to me to be possible that this condition may have been due to some dietetic influence. In the cases observed by me, meat was the chief article of diet, since vegetables and even potatoes had become scarce as a result of prolonged drought. I am convinced that the pains were not of a rheumatic nature, and it will be noted that one of the patients had slight fever, while the temperature of the other was normal.

It is necessary in cases of this kind to exclude the presence of salicylates and of antipyrine, etc., in the urine, since these bodies give a colour reaction indistinguishable from that of aceto-acetic acid. The differentiation, however, does not cause any difficulty, inasmuch as aceto-acetic acid, being highly volatile, can be driven off by boiling. If the ferric chloride test is positive after the urine has been well boiled, it is not due to di-acetic acid, but is probably due to one of these drugs.

It is very little trouble to apply the test, and the result, I believe, would often prove interesting.

Reviews.

SURGERY.

The ninth edition of Rose and Carless's well-known Manual of Surgery* has now been reached. The first appearance was in 1898, when it was published with the view to placing before practitioners and students of medicine a short, concise treatise on modern surgery. This is still the aim of the authors, and although much new matter has been added in this last edition, the book is still of modest size. When small compass is aimed at it is natural that some sacrifices must be made. The black and white illustrations suffer much in some places in being crowded too close to the reading matter; also, where two illustrations appear superimposed on either side of a page of the thin India paper, the one interferes with the other.

The coloured illustrations are of a very high order. Amongst them a papilloma of the bladder is illustrated as seen through the cystoscope, and the artist has reached a vividness of representation that could hardly be surpassed.

No marked epoch-making discovery has appeared during the three years that have elapsed since the last edition; rather has quiet progress been made all along the line. Work as recent as Professor McEwan's communications on brain tumour, at the International Congress of 1913, has been incorporated in the text.

The chapter, however, on acute intussusception stands in urgent need of revision. Few abdominal surgeons would agree that "In the most acute forms of the disease little can be done, owing to the extreme prostration of the patient." The early symptoms of this abdominal emergency have been shown by Clubbe, of Sydney, to be quite characteristic, and if the disease is recognized within that time the mortality, in competent hands, should be less than 10%.

In the description of the operation of litholapaxy, no reference is made to the now almost universal practice of controlling the result by cystoscopy. In this urinary section also, there is no reference to pyelography in the diagnosis of lesions of the renal pelvis; nor is phenol-sulpho-phthalein mentioned in the diagnosis of renal function.

Amongst a number of similar publications on modern surgery, this manual sustains the position it has held for the past 16 years. It is the adopted textbook of many English speaking medical schools; in short, it is a standard work.

THE CARE OF INFANTS.

Dr. Eric Pritchard is so well known an authority on infant care and management that any publication written by him is sure to find a warm welcome. His book (1) on "The Infant" carries with it its own recommendation. It is original and therefore fresh; it is practical and therefore useful; and it is thoughtful and therefore good. The first chapter is devoted to the management of breast-feeding, and contains much useful information. It should be valuable to midwives, and to medical men and women in charge of maternity hospitals and baby clinics. The following chapters deal with the nutrition of infants, their food requirements, and the motor functions and training of the nerve centres. Constipation in infants is fully dealt with. The

*Rose & Carless's Manual of Surgery for Students and Practitioners, IX. Edition, revised by Albert Carless, M.B., M.S. (Lond.), F.R.C.S., 1914. London: Bailliere, Tindall & Cox; 8vo., pp. 1,408 profusely illustrated. Price, 21s. net.

(1) The Infant: Nutrition and Management, by Eric Pritchard, M.A., M.D. (Oxon.), M.R.C.S. (Lond.), 1914. London: Edward Arnold, Crown 8vo., pp. 262 Price, 3s. 6d. net.

author condemns severely the practice of giving castor oil to newly-born infants. He has found much value in liquid petroleum in the treatment of constipation in infants. There is a chapter on the preparation and uses of dried milk, of which he speaks favourably. The author has put forward a theory of his own on the causation of rickets which deserves the closest consideration. The treatment of some common symptoms in infancy is discussed in a special chapter, and in another part of the work the importance of mothercraft is dealt with. More space might have been allotted to summer diarrhœa, a disease which, in Australia, as in European countries, gives more trouble than any other in young children. All those interested in the treatment of the complaints of infancy should get a copy of this book.

Naval and Military News.

We are informed that a department known as the "Lunacy (D) Block" at the R.A.M.C. Hospital at Netley has been organized as a large reception-house through which all the insane in the army are passed. This department has been placed under the care of Dr. G. E. Miles, late Medical Superintendent of the Hospital for Insane at Rydalmere, New South Wales. Dr. Miles, who was on a visit to England, offered his services to the R.A.M.C., and has now attained the rank of Captain.

It appears that a considerable number of the recruits who were enlisted in Lord Kitchener's army were found to be insane. These recruits are brought before the Medical Board, of which Dr. Miles is the Lunacy expert, and in all cases in which insanity in one or other form is discovered, are sent to the County Asylums or to their friends, after the necessary formalities have been complied with. Up to the end of November, over 200 had been dealt with in this way.

In addition, another class of patient is dealt with. A certain number of men at the front have their nerves absolutely shattered by shell fire. Many of these men were found to be deaf, dumb, and acutely hysterical on reception. They were suffering from a large variety of paralytic symptoms, some of which were of a peculiar type. These men start at the slightest sound. They are usually quite reasonable, and, strange to say, are capable of giving a lucid account of their condition in writing.

The Commissioners in Lunacy have handed over the new unoccupied Home for Defectives to the War Office. This Home is fully equipped, and has a complete medical and nursing staff sufficient for 300 patients. It is proposed at a later date to extend the arrangement to accommodate 600. No certified cases will be sent to the Home; and it is in this place that the majority of the patients suffering from "shell neuroses" will be treated.

The health of the Expeditionary Force in Samoa is said to be extremely good. No malaria has been reported, but a few cases of dengue and one of dysentery are at present under treatment. It is stated that all the patients are doing well.

Medical News.

The Postal and Customs Department have issued a detailed statement dealing with the expenditure during the year 1914. Among other items, that of the Maternity Allowance is dealt with. In order to gauge the significance of this matter to the Commonwealth, it is necessary to take into consideration the number of births registered during the year, and to compare this number with the number of women applying for the allowance and the number of those to whom the allowance has been granted. Up to the present, the Commonwealth Statistician has not made available the complete returns of the vital statistics for the year. The comparison cannot be made at present, but a general idea can be gleaned from the available figures. Up to December 26, 1914, the sum of £1,431,945 has been paid out in maternity allowances. The payment has been made since October 10, 1914, i.e., practically for a period of 27 months. 288,984 claims have been made, of which 1,679 were rejected, and 936 were still under consideration. On the assumption that some of the lastnamed will be refused, it may be assumed that 287,000 claims will be regarded as good. This number would be equivalent to about 127,548 per annum. During the year 1913 there were 135,714 births registered in the Commonwealth, of which 2,716 were twin births, and 24 triple births. Taking the figures for New South Wales, 109,294 claims were granted up to December 26, 1914, and 246 were under consideration. On the assumption that the total number of good claims will number 100,400 this would represent 44,616 for 12 months. But there were only 52,793 births registered during the year 1913, and presumably the number for 1914 will not exceed 54,000.

The figures for Victoria are equally suggestive. There were 77,019 claims paid and 264 under consideration. It is therefore permissible to assume that 34,284 good claims will be dealt with. The number of births in the State in 1913 was 33,970. In Queensland, 41,664 claims were paid, 237 were rejected, and 119 were under consideration. In South Australia, 26,583 claims were paid, 156 were rejected, and 121 were under consideration. In Western Australia, 19,136 claims were paid, 142 were rejected, and 156 were under consideration. Finally, in Tasmania, 12,673 claims were paid, 71 were rejected, and 30 were under consideration.

On the basis of the number of births registered it 1913, it would appear that 99.9% of all women in the Commonwealth delivered of one or more children have received maternity allowances. The number of rejected claims is proportionately small, and does not materially affect the position. Even if a full allowance be made for an increase in the number of births in 1914, the proportion of mothers claiming the bonus must remain extremely high.

The erection of hospitals in every district is now regarded as a necessity, and, according to the requirements of the locality, various forms of institutions are being supplied with a remarkable rapidity. A new and apparently excellently equipped and planned cottage hospital was opened on January 2, 1915, at Gin Gin, in Queensland, by the Hon. Angus Gibson, M.L.C. The cost of erection and equipment was covered by moneys subscribed locally, and supplemented by a Government subsidy. In all, £2491 were available. The cost of the institution was £1810, of which sum £1308 were absorbed in the building itself. The hospital comprises of two general wards, a matron's room, and out-patients' room, and operating theatre, a dispensary, and the usual offices. Gin Gin is to be congratulated on having acquired its hospital without encumbering itself with a building debt, and having a balance which should cover the cost of maintenance for at least one year.

On July 11, 1914, attention was called to the scheme of medical research under the English National Insurance Act, and special reference was made to the proposal then under consideration by the Medical Research Committee that the Lister Institute of Preventive Medicine should be handed over to the Government for the purposes of the Act. On November 18, 1914 (according to the "Times"), a meeting of the members of the Lister Institute was held to consider the proposal to authorize the governing body to effect an amalgamation with the Medical Research Committee. The proposal was rejected by 39 votes against 32. Sir John Rose Bradford pointed out that the division demonstrated that the proposal did not meet with the approval of the majority, and it would therefore be necessary for the governing body to reconsider its plans.

We understand that the Federal Quarantine authority has received information of a suspected case of small-pox in Adelaide. The patient was one of the passengers on board the "Runic." He was properly isolated, as were all contacts. The risk of dangerous spread of the disease is small, but every precaution will be necessary to complete the work, since all the passengers have been traced and brought under control.

An announcement has been made to the effect that a night-clinic was opened at the Royal Prince Alfred Hospital, Sydney, on January 11, 1915. The clinic will be attended on Monday and Wednesday evenings.

PLATES ILLUSTRATING DR. J. H. NATTRASS'S ARTICLE.

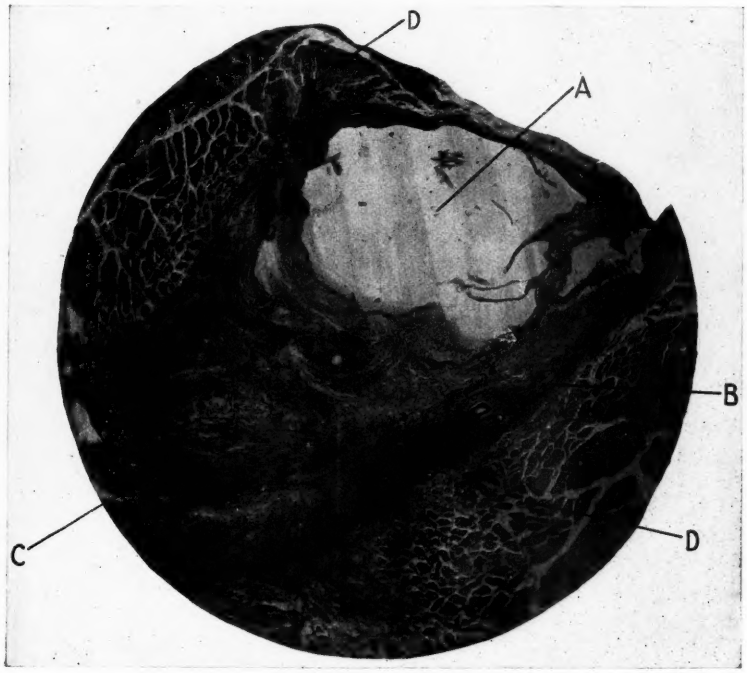

FIG. 1 (Low Power).

Ovary transplanted on to left abdominal rectus muscle for 370 days.

A. Large Graafian follicle.
B. Small Graafian follicles.
C. Ovarian Stroma.
D. Rectus Abdominalis muscle fibre.

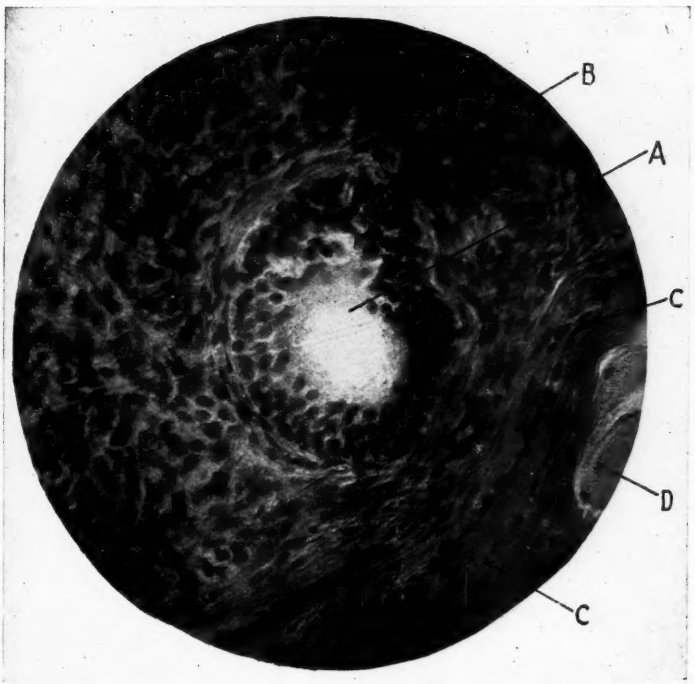

FIG. 2.

High power photo. of small Graafian follicle B in Figure 1.

A. Small Graafian follicle.
B. Ovarian Stroma.
C. Fibrous adhesions formed between the ovary and rectus muscle.
D. Fibres of rectus muscle.

Medical Journal of Australia.

SATURDAY, JANUARY 16, 1915.

Transplantation of Organs.

It has long been known that certain tissues, when removed from the body, can be re-implanted. The practice of dividing the piece of bone removed by trephining into small fragments and utilizing these fragments as a nucleus for the formation of new bone has become established. In this case, much of the implanted material undergoes absorption, but a sufficient number of cells retain their osteo-phytic character, and from them new bone is built up. As early as 1897, Murphy showed that portions of blood vessels could be transplanted, and thus replace a portion which has been destroyed or removed. His method of invagination of the implanted piece was not satisfactory. Payr advanced the problem a step further, although he ignored the principle of the transplantation of animal tissue. In 1900 he showed that aluminium tubes could be utilized to fill in a defect in a vessel. This stimulated Carrel to work out a satisfactory method of true transplantation, and in 1905 he described his scheme of arterial suture, which enabled him to place transplantation of arteries and veins into the field of practical surgery.

Carrel's work in this direction led to the recognition of two important facts. In the first place, he found that auto-plastic, and also homo-plastic transplantation could be effected without difficulty, but it was shown that the vessel wall underwent a certain amount of degeneration, and that but little regeneration followed. Notwithstanding these changes, the vessel remained capable of performing its function. Further investigations undertaken by Carrel and his assistants, Garré, Stich, Zöppritz and several others, revealed the fact that the tunica intima of the transplant starts to hypertrophy within a few days of the operation, and reaches its maximum in about 10 days in auto-plastic transplantation. The elastic elements of the media and adventitia are always preserved and do not participate in any degenerative changes. When homo-plastic transplantation is adopted, the overgrowth of the intima is less marked and less constant, but is nevertheless present. In the case of hetero-plastic experiments, quite a different story has to be told. Carrel and Guthrie succeeded in implanting portions of the posterior tibial artery into the aorta of rabbits and cats, and the implanted portions were patent and pulsated after 50 days or more. It was found, however, that the implant had become absorbed in toto, and had been replaced by a massive tube comprising of connective tissue. No trace of the structure of the three coats of the implanted artery could be found. The first fact that transpired was that, if favourable conditions for the nutrition of the implant be provided, the cellular elements will survive if they are autogenous, or at times even when they are derived from animals of the same species. The second fact that was demonstrated was that, while hetero-plastic transplantation, as such, fails under the conditions obtaining normally, the transplant will be replaced by a structure of the same shape which is capable of fulfilling the mechanical requirements of the tissue replaced, but not the physiological.

Carrel further demonstrated that organs or portions of them could be transplanted. Liver, spleen, kidney, pancreas, thyroid, ovary and other organs have been transplanted with complete success. In the early endeavours, special attention was paid to the suture of the afferent and efferent vessels of the implanted organ to the corresponding vessels of the host. One example will suffice to demonstrate the limits of this procedure. Using heterogenous material, cats were kept alive after the implantation of kidneys for several weeks, and, during this period the urine had a specific gravity of from 1000 to 1035, and contained for a very short time a mere trace of albumin. When homogenous organs were employed, the results were better, while whole organs have, on a few occasions, been transplanted from one site to another in the same subject. This method was followed by a drastic modification. The joining up of the vessels of the transplant with those of the host was dispensed with, and the nutrition of the tissue implanted was left to the surrounding tissues. It became necessary to use small pieces of organs, and we have therefore returned after a scientific campaign to the principle made use of in

the covering of the defect caused by trephining. In his highly interesting and instructive article, published on page 49 of this issue, Dr. Nattrass deals with his own work on transplantation of ovarian tissue carried out by this method. Hitherto, autoplastic transplantation of small portions of organs has succeeded in the vast majority of cases. Homoplastic transplantation offers greater obstacles, while hetero-plastic must fail on theoretical grounds. The introduction of cells of one species into the body of another species is followed by complete absorption, and the formation of lysins, which endow the serum of the host with the power of dissolving cells of "transplant giver." As long as the power of absorption and the production of lysins is present, so long must it remain impossible for a portion of an organ of a foreign species to be implanted with success.

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THE BROWN CASE.

The judgement read by the Judge in Equity in the Lunacy Court of New South Wales on December 24, 1914, in the case of Thomas Edwin Brown, ends a series of enquiries which are of considerable significance and importance to the medical profession.

The history of this case dates back to 1900, when Brown is stated to have suffered a head injury. According to his own account his neighbours and acquaintances said that he was insane at that time, and he complained that this report rendered it impossible for him to live with his wife. In 1902 serious domestic disagreements arose in regard to the education of his children. Brown maintained that his wife "had the Roman Catholic Church, the Attorney-General, and the Minister for Justice behind her." His wife is said to have left him in consequence. A police sergeant named Hickey appears to have been called in during the quarrels. In 1903 the wife returned, but again left him, as he stated, "in obedience to a scheme concocted by Hickey." Mrs. Brown was delivered of a child shortly after, and Brown denied paternity in an affidavit. An order for alimony was made, against which Brown appealed before the Full Court, but without success. He became involved in various forms of litigation, and declared himself a bankrupt. His father revoked a will made in his favour, which act Brown ascribed to persecution. He filed a petition for divorce, and in answer his wife claimed maintenance. The maintenance order was issued, and the divorce proceedings failed. Brown claimed that the Judge acted maliciously in these proceedings. He appealed to the High Court, and failing to get satisfaction went to England, where he attempted to press his various suits.

In 1910 Brown laid information "against people conspiring against him." The defendants in these cases were the Shire Council, the New South Wales Railway Department, and the Water Board. In each case he failed. In 1911 Brown addressed a letter to the Governor-General. This letter was of so curious a character that the Governor-General sent the document to the police, with a request that the condition of the writer's mind should be enquired into. The police adopted a very strange course in sending Sergeant Hickey to interview Brown, instead of requiring their own medical officer to make an expert examination, and to report. Hickey had a long conversation with Brown, and reported that he had failed to elicit any signs of insanity. In 1913 Brown charged all the Judges of the Supreme Court with conspiracy, and in Court he stated that he had been subjected to malicious, untrue, criminal, unreasonable and vindictive persecution.

There were further documentary and other evidence that Brown was suffering from systematized delusional insanity. Early in 1913 Sergeant Hickey, accompanied by a junior constable, had cause to interview Brown. It is unknown what actually transpired at this interview, but what is known is that Brown shot Hickey, and that the junior constable ran away. Brown made no attempt to escape, but allowed himself to be arrested, and stood his trial. The jury disagreed. At the second trial the jury found him guilty, but he appealed against this conviction, on the ground of the inclusion of inadmissible evidence. A fresh trial was ordered. The third jury returned a verdict of "not guilty." The case was complicated by the fact that Brown himself refused to allow his counsel to base the defence on a plea of insanity.

On leaving the Court Brown was taken to the detention house. The enquiry was conducted by Mr. M'Kensey. At this enquiry Dr. Palmer, the Government Medical Officer, and Police Surgeon, Dr. Andrew Davidson, Dr. A. W. Campbell, Dr. Rennie, and Dr. Sinclair, the Inspector-General for the Insane, gave evidence to the effect that Brown was suffering from paranoia. Dr. Chisholm Ross, the Visiting Medical Officer of the reception house, expressed himself less positively. Dr. Richard Arthur and Dr. J. B. Nash were of opinion that Brown was not insane, and Dr. Sydney Jamieson, Dr. A. M. Murray Oram, Dr. A. C. Cahill, Dr. W. W. J. O'Reilly, and Dr. A. E. Perkins gave evidence to the effect that they had failed to elicit objective signs of insanity. The magistrate found that Brown was insane, and was not under proper control, and further that he was a proper person to be taken charge of and detained. He therefore ordered that he should be removed to the Hospital for the Insane at Parramatta.

The Council of the New South Wales Branch of the British Medical Association, on June 2, passed the following resolution, in view of the conflicting evidence:—

> "That in the opinion of the Council, it is not in the interests of the medical profession that medical men should give evidence in Courts of Law as experts in departments of medicine alien to those in which they practise."

The last stage of the tragedy was enacted in the period lying between May and December, 1914. In May, Brown appealed against the decision. Various technical points were raised before the Chief Justice, Mr. Justice Pring, and Mr. Justice Street, and a writ of habeas corpus was applied for. The issue of insanity was heard in the Lunacy Court, before Mr. Justice Harvey, and after medical and lay evidence of a conflicting nature had been given, his Honor delivered a judgement to the effect that Brown was insane, and that he should be taken care of.

There are two principles involved in this case. In the first place, there is the question of a proper safeguarding of the freedom of the indivdual, save when he is a danger to himself or to others, or likely to become so, or when he is incapable of managing his own affairs. This protection against the deprivation of personal freedom is amply provided for in the New South Wales lunacy law; too elaborately perhaps. In the present instance, the case was complicated by the criminal proceedings in which the individual on trial, though insane, refused to allow his counsel to plead insanity. Legal procedure renders it necessary that the criminal issue shall be kept distinct from the issue of insanity. Under these circumstances, the Crown Prosecutor was debarred from taking what to a layman might appear the most obvious course, namely, of having the issue of insanity tried prior to, or simultaneously with, that of murder. The layman might further question the logic of allowing a person who can be shown to be insane to choose whether he will put in a plea of insanity as a defence. In law, notwithstanding the fact that the prosecution may have ample evidence of the insanity of the prisoner, his sanity is not taken into question, and consequently the prosecution could not plead the issue of insanity to its own indictment for murder. The only way out of the dilemma was to allow the criminal charge to take its course, and the prisoner being acquitted, to cause the police to set in motion the machinery provided by the lunacy laws.

The second point turns on the appearance of a large number of medical witnesses, who gave evidence at the hearing before the magistrate on the question of insanity. Nothing tends to bring the opinions of medical practitioners so much into disrepute as conflicting evidence in a court of law. In the Brown case, it became quite impossible for the public to appreciate the reason for the diverging evidence. On the one side, lunacy experts, who had had opportunity of making a prolonged study of the case, determined that the man was a paranoic. On the other side, experienced practitioners, who had dealt with persons under practically every conceivable condition, formed a negative opinion, for the chief reason, probably, that they were in the habit of basing their opinion of sanity or insanity on the evidence obtained at the interviews, without taking the full history into consideration. It must be pointed out that this indirect evidence, in order to carry weight, must be substantial, and may never be of the nature of hear-say or unreliable statements of possibly interested parties. We have no doubt that all the witnesses would have agreed on the diagnosis of paranoia, had the indirect evidence been accorded greater consideration and importance.

A few years ago a proposal was made in a provincial town in England that the medical witnesses, called both for the prosecution and defence to give expert evidence in a court of law, should meet together in consultation before entering the witness-box, and should attempt to determine what the facts were. This proposal was discussed by the Representative Body of the British Medical Association on several occasions, but was not adopted, partly because it was recognized that medical men practising in large towns would not agree to the principle, and partly because objection was likely to be raised by the lawyers, since this method would necessarily lead to a weakening of one or other side of the case.

Nevertheless, we hold that this proposal would effect a far better result than the suggestion put forward by the New South Wales Branch Council, and since it would be carried out in the interests of truth and justice, and could not be objected to on the ground of collusion, it should commend itself to the public. An attempt should be made by the profession to gain the approval of its members to this practice, and once the principle was accepted its adoption as a regular method of procedure should not be a difficult matter.

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GARBAGE DISPOSAL AT SYDNEY.

The outcry against the practice of punting refuse to sea in the neighbourhood of the suburbs of Sydney has been effective in bringing the City Council to a sense of its duty. For the present, a short contract has been entered into, but an assurance has been given that refuse, as contrasted with garbage, will be dealt with in this manner. On January 12, 1915, the City Council dealt with a minute presented by the Lord Mayor. In this minute, the whole question is reviewed, the system of carrying refuse to sea is condemned, and a programme for the disposal of garbage, street refuse and other material is given. It is proposed that all the refuse should be passed through high temperature destructor furnaces, that the existing furnaces should be worked at a lower rating to effect greater efficiency, and that a new six-celled incinerator should be installed at Camperdown in order that the cost of haulage of refuse and of clinker may be reduced. The suggestion is made that the clinker should be utilized to fill in a clay-pit in Camperdown, so that, in the course of time, the value of the land when it is raised to the level of the adjacent area, would be greatly augmented. The Lord Mayor further proposes that the Moore Park destructor should be equipped with a modern flag-making plant, mortar mills and the like, and, finally, that the feeding and charging methods at Pyrmont should be revised and re-arranged. From these suggestions, and from the whole tenor of the statements made by the Lord Mayor, it would appear that the inhabitants of Sydney will be better served by the City Council in future than they have been in the past.

Abstracts from Current Medical Literature.

THERAPEUTICS.

(16) Chaulmoogra Oil in Leprosy.

V. G. Heiser ("American Journ. of Trop. Diseases," November, 1914) gives an account of the treatment of leprosy in the Philippine Islands by the hypodermic application of chaulmoogra oil mixture. His attention to the therapeutic action of this oil in leprosy was first directed in 1907 by success which Dyer, of New Orleans, had achieved. When given by the mouth so much nausea is produced that the patients are unable to continue the treatment for more than a few months. Emulsions and capsules were tried, but were found to be unsatisfactory. The mixture injected consists of 60 c.cm. of chaulmoogra oil, 60 c.cm. of camphorated oil, and 4 grammes of resorcin dissolved with the aid of heat. The injections are made at weekly intervals, and the initial dose is 1 c.cm. This dose is increased gradually to the point of tolerance. Saline purgatives are given freely; the patient takes a 2% hot sodium bi-carbonate bath every other day. Strychnine is not used. In all, 12 patients were treated in this way. Nine of them were under treatment from February, 1912. In one case, recovery was apparently complete, and the microscopical evidence of the disease disappeared. In four further cases the clinical evidence of leprosy practically vanished, and in one slight improvement was noted. Three of the patients declined to continue the treatment for a sufficiently long time. Heiser states that the experience of these cases and of a number of others still under observation has led him to the conclusion that the treatment is equally efficacious in the tubercular, the anæsthetic, and the mixed forms. While the results obtained appear to be very promising, he points out that spontaneous arrest and apparent cure is not infrequently observed, and that it will be necessary to determine the ultimate effect of the treatment in a large number of cases.

(17) The Effect of Various Rays on the Tissues.

P. Degrais ("Journ. of Advanced Therapeutics," July, 1914) discusses the histological modifications produced in the tissues by rays such as X-rays, radium rays, light rays from lamps, and from the sun, spoken of as actinic rays. Every ray that strikes a cell influences that cell. The resultant changes are dependent on the degree of receptivity, the quantity of rays absorbed, the special qualities of the individual rays, the time elapsing between the application and the histological determination, and, finally, the effect of filtering the rays through the tissues themselves. Cells differ considerably in regard to the degree of receptivity. Healthy cells are more resistant than sarcomatous cells. Young cells are extremely sensitive. The sensitiveness of the cell is greatest when its reproductive activity is most intense, when its karyokinetic future is longest, and when its morphology and its function are less definitely fixed. Turning to the action of X-rays, the effect of a non-necrotic dose is hypertrophy. Epidermis cells are first swollen, their elements take up ordinary stain in a diffuse manner, and they present different degrees of "cavitaire" alteration. After necrotic doses all the elements of the epidermis are destroyed. Preceding this destructive process, the cytoplasm and nuclei of the cells pass through a phase of enormous hypertrophy. Degrais describes in some detail the changes produced in the various layers of the skin and deeper parts in hypertrophic radiodermatitis. In the next place he deals with changes effected in pathological tissue. Observations have been made on epitheliomata of the chin. After a latent period of 15 days a number of the cells increase considerably in volume. The nuclei participate in the swelling, the nucleoli undergo hypertrophy, and the chromatin is materially altered. Many cells undergo keratinization. Polynuclear diapedesis becomes very active, and as the tumour cells undergo necrosis they are replaced by horny blocks, which eventually give place to cicatrization. In other malignant growths a similar process is effected. The changes produced by radium are very similar. The observations have led the author to conclude that histologically various rays produced modifications of the same order. On the other hand clinical facts are available which show that there is a very great difference in the action of different rays. In comparing Roentgen rays and radium rays, it is found that the former can be applied in moderately large quantities to an extensive surface, while the latter are more powerful but more concentrated in their action. Radium rays are capable of acting through great thicknesses of tissue, and they can be applied to parts of the body to which X-rays cannot be applied.

(18) High-frequency Current in Pulmonary Tuberculosis.

Albert C. Geyser ("Medical Times," September, 1914) advocates the application of the high-frequency currents to the chest, over the affected area, in pulmonary tuberculosis. The treatment should be combined with general hygienic measures, and is based on the theory that hyperæmia is the essential curative factor in all forms of treatment of tubercular diseases, as anæmia and a poor blood supply are important predisposing causes of infection. The high-frequency current when applied over a tuberculous area causes an immediate rise in temperature of that area of 2° or 3°, as produces dilatation of blood vessels, increased blood supply, and positive chemotropism, leading to victory of the leucocytes over the invading bacteria. Every case can be cured if treatment be instituted before the second stage of the disease. The technique consists of applying large flexible tin electrodes anteriorly and posteriorly over the affected area, and bandaging them closely to the chest, to avoid sparking from the metal to the skin. There should be a sensation of gentle warmth only, and any stinging or burning must be checked by readjusting the electrodes. A current of 500 milli-ampères is allowed to act daily for 30 minutes during the first month of treatment. The physical signs at first appear to get worse, but the patient's symptoms improve. During the next two to four months the applications are made every other day with a gradual increase in the dosage to 2000 milli-ampères. The physical signs improve, and tubercle bacilli disappear from the sputum. In less successful cases longer treatment is required. On the cessation of treatment general hygienic measures must be carefully continued. While the high-frequency current plays an important part in the treatment of this disease, other therapeutic agents must be employed when indicated.

(19) X-rays in Exophthalmic Goitre.

T. G. Moorhead has treated nine cases of Graves's disease by means of X-rays, and records the results in the Dublin "Journal of Medical Science" of November, 1914. In one patient in whom the disease was very severe the treatment was maintained for three weeks only. The tachycardia was somewhat lessened, but otherwise the condition was unaffected. The remaining patients were under observation for periods varying from a few months to five years. Two of the patients had been treated so recently that it was impossible to determine the ultimate results; they had improved very considerably. In five cases all the symptoms had disappeared, the patients were able to live ordinary lives, and to perform ordinary work. In regard to physical signs, a slight enlargement of the thyroid gland could still be made out, but the consistency of the gland was firm instead of being soft. In four patients some exophthalmos persisted. A brief clinical account of one of the cases is appended. The author emphasized the fact that, while the X-ray apparently lead to a satisfactory result, no immediate sensational recovery is to be expected. Patience and perseverance are required.

(20) Supsalvs.

According to the "British Journal of Dermatology," October, 1914, supsalvs represents a stable form of arsenobenzol in suppository form. It is claimed for this preparation that it is as active as 606 given intravenously, while its application is free from all risks. The drug is supposed to become more active as a spirochæticide when a trace of extract of liver is added to the 606. Each suppository contains 0.1 gramme of arsenobenzol. One is applied every three days after a cleans-

ing enema, and three series of six suppositories are administered at intervals of a fortnight.

UROLOGY.

(21) The Operative Treatment of Prostatic Atrophy.

H. Datyner ("Zeitsch. f. Urologie," March, 1914) records a case of atrophy of the prostate. The symptoms of this condition are approximately the same as those of hypertrophy of the prostate. Five different forms are recognized, the classification being based on the causation: (i.) the inflammatory, (ii.) the exhaustive, (iii.) the compression, (iv.) the senile, and (v.) the congenital form. The pathological changes consist to a great extent in atrophy of the glandular tissue, associated with fatty degeneration of the fibromuscular tissue and inflammatory infiltration and indurative new formation of connective tissue. Arteriosclerotic changes are held by some observers to be responsible for the clinical symptoms, while others have expressed the opinion that contraction of the neck of the bladder and sphincter muscle, produced by spasm or chronic indurative inflammation, should be held responsible. The latter view appears the most justifiable, inasmuch as prostatectomy has yielded excellent results in numerous cases. When all other pathological conditions can be excluded, supra-pubic prostatectomy is the best treatment of these cases.

(22) Moveable Kidney.

Marion ("Journal d'Urologie," June, 1914) has treated 53 cases of moveable kidney by nephropexy. He is strongly of opinion that the operation should be employed more frequently than it is in this condition. He maintains that it is capable of yielding very good results, provided that the technique employed is correct. He had adopted Albarran's method of making four flaps in the renal capsule. The lower pole of the kidney is not touched, so that the organ lies in its capsule as if it were in a hammock. Each flap is secured by a catgut suture. After all the perirenal fat is removed in the area toward the diaphragm, he fixes the kidney as high up as possible, passing the suture from one of the upper flaps over the twelfth rib, and that from the other upper flap over the eleventh rib. The needle is passed horizontally through the diaphragm, pleura and intercostal space. The lower flaps are then stitched to the quadratus lumborum muscle and to the tip of the twelfth rib. The perirenal fat is sutured to the lower pole of the kidney. The wound is then closed, save for the passage of a small drainage tube. If symptoms of chronic appendicitis are present, the appendix is removed through the same wound. Marion never carries out this operation unless pain be present. He regards Dittl's crises, hæmaturia, hydronephrosis, and pyelitis as absolute indications. He states that excellent results follow the operation in the painful type of the condition, especially when it can be shown that the pain is renal. The results are less favourable in the dyspeptic type. He is of opinion that the operation should only be performed in the nervous type of moveable kidney, when all other means have failed to procure relief, and when the pain disappears with rest in bed.

(23) Renal Operations in Bilateral Diseases of the Kidney.

Casper ("Zeitsch. f. Urologie," July, 1914) recounts his experience of operations on the kidney in cases in which the other organ is not quite healthy. When ureteral catheterization was first introduced in urinary surgery, the general opinion tended toward the doctrine that nephrectomy should never be performed unless the second kidney could be shown to be anatomically sound. This principle has now been abandoned to an increasing extent, and at the present time, more stress is laid on the functional condition of the second organ. A kidney may be able to carry out the functions within normal limits without being anatomically intact. Casper employs the phloridzin and the indigo-carmine tests for determining the function of each kidney. His very extensive experience teaches that the renal function may be regarded as normal if the blue appears after 5 to 8 minutes, and if the sugar appears after from 18 to 25 minutes. Casper has performed 337 operations on kidneys since the introduction of these tests. In 322 cases of unilateral renal affections, in which the other kidney had been shown to be sound and functionating normally, this organ either performed the necessary function after the removal of the diseased kidney, or was found at the autopsy to be free from pathological changes. In eight cases the second kidney was found to be the seat of gross anatomical changes, notwithstanding the fact that it performed its functions within normal limits. In one of these cases, the patient died of uræmia. This was a case of renal tuberculosis, with interstitial nephritis affecting the second kidney. The urine contained 3‰ albumin. Casper had only applied the phloridzin test in this case. In nine further cases the function was found to be defective. Eight of the patients died as a result of the operation (six times nephrectomy and twice nephrotomy). In six of the patients the typical symptoms of uræmia were present. The ninth patient died 1¾ years after the operation from chronic uræmia, which had set in directly after the operation. In conclusion, Casper calls attention to some important points in connexion with the use of phloridzin. He had noted in a few cases in which the flow of urine was impeded by the presence of a stone or other cause that no sugar was secreted. At times, sugar may fail to make its appearance, owing to the indifferent quality of the phloridzin injected. The minimum quantity employed should be 0.01 gramme. Polyuria should be avoided, as it is often difficult to detect sugar in high degrees of dilution. It is therefore advisable to give the patient very little fluid to drink before applying the test.

(24) Kinked Ureter.

R. A. Bickersteth set himself the question, what is the commonest cause of ureter obstruction in those cases where no stone is found? and supplies the reply in the "Proceedings of the Royal Society of Medicine," July, 1914. He found that few specimens which were capable of throwing light on the pathology of obstructed ureters were included in museum collections. The reason was that in the majority of large hydro- or pyo-nephrotic tumours the organs are much damaged during the operation for removal. He has made a special study of these kidneys, and has found that they possess certain characteristic features. The pelvis is usually much dilated and soft, and its walls thin. The body of the kidney is enlarged and hollowed out, forming the "boat-" or "canoe-shaped" kidney. The ureter takes its origin at the lowest part of the dilated pelvis, runs upwards for three or four inches apparently in the substance of the pelvic wall. At the point of emergence, the ureter is found to be kinked; the kinking takes place over an abnormal accessory renal artery. After removal, the stretched artery retracts so much that it is not always possible to demonstrate its presence. The importance of this is very considerable, and the author points out that it is highly desirable to recognize this condition of kinking at a time before irreparable damage has been inflicted on the kidney. In some cases in which hydronephrotic dilatation has advanced to a considerable degree, he has limited his surgical interference to a simple division of the accessory artery, with complete success. He regards this form of kinking of the ureter as the commonest cause of ureteral obstruction in cases where no calculi are present. In these cases the great bulk of the hydronephrotic tumour consists of the dilated renal pelvis. The kidney itself participates only to a slight degree in the enlargement. In large pyonephrotic tumours caused by calculus, the renal pelvis as such has practically ceased to exist. The bulk of the tumour is made up of dilated calices, enclosed by stretched strands of renal cortex.

(25) Ureteral Calculi.

W. Thelwall Thomas ("Proc. Royal Society of Med.," July, 1914) states that dull, aching pain in the lumbar region is a constant symptom of ureteral calculi. Renal colic occurs at times. Hæmaturia and pyuria are less common. The diagnosis should be made on the basis of the lumbar pain, with the aid of an examination of the urine and radiography. A small stone may be removed by free diuresis, with morphine if the pain is great. Larger stones must be removed surgically. The author dislikes transperitoneal operations.

Contract Practice

XIII.

In the previous articles a brief account of the conditions of Lodge Practice in each of the States has been sketched. These conditions are governed by the terms of the Common Forms of Agreement in those States in which the proposals of the Branch have been accepted by the Friendly Societies. In the other States the terms may be regarded as the policy of the Branch and as the basis for negotiations with the Friendly Societies. Under these circumstances it will be found useful to compare the conditions obtaining in each Common Form of Agreement. It has therefore been determined to reprint side by side the six forms adopted by the six Branches of the British Medical Association in Australia. In order that this may be done, the greater part of an issue will have to be given up to this purpose. This plan will be carried out next week.

British Medical Association News.

BRITISH MEDICAL ASSOCIATION (AUSTRALIA) MILITARY MOTOR AMBULANCE FUND.

During the week ending January 12, 1915, 29 subscribers have contributed £37 6s. 6d. to the Motor Ambulance Fund. The total number of subscribers up to date is 682. There are approximately 200 members of the profession with the Expeditionary Forces. The proportion of subscribers to those members of the Australian Branches who are remaining at home is about 29½%. The total amount received is £1,289 10s. 9d. Another £310 is required to enable the Federal Committee to purchase three motor ambulances. We appeal to the remaining 70% of members to supply this amount as soon as possible.

	£	s.	d.
Dr. Baleman, J. E., Selwyn, Q.	0	10	6
„ Breinl, Anton, Townsville, Q.	1	1	0
„ Brown, R. Lee, Kensington, N.S.W.	1	1	0
„ Campbell, J., Marrickville, N.S.W.	1	1	0
„ Clement, D. P., Perth	1	1	0
„ Dixson, Thomas, Sydney	1	1	0
„ Grimmer, C. G., Avoca, Vic.	1	1	0
„ Hawkes, C. S., Brisbane	5	5	0
„ Johnson, J., Mount Gambier, S.A.	1	1	6
„ Langmore, P. N., Berwick, Vic.	0	10	0
„ Lillies, H., Armadale, Vic.	2	2	0
„ Lynch, A. F., South Australia	1	1	0
„ Maher, C. W., Sydney	1	1	0
„ Morris, J. Newman, Auburn, Vic.	1	1	0
„ Morton, J. C., Seymour, Vic.	1	1	0
„ McAree, F. E., Middle Park, Vic.	2	2	0
„ McKee, J. W. S., Uralla	1	1	0
„ McLean, T. A., Traralgon, Vic.	2	2	0
„ Newman, E. L., Scone, N.S.W.	1	1	0
„ Pulliene, R., Adelaide	1	12	6
„ Reid, W. A., Sale, Vic.	1	1	0
„ Roe, A. L., Brisbane	1	1	0
„ Ruddle, A. J., Daylesford, Vic.	1	1	0
„ Sangster, W., Mount Gambier, S.A.	1	1	0
„ Smeaton, B., Adelaide	1	1	0
„ Stewart, D. E., Brunswick, Vic.	1	1	0
„ Wells, C. V., Adelaide	1	1	0
„ Willis, C. St. L., Innisfail, Q.	1	1	0
„ Wilson, L., Ravensthorpe, W.A.	1	1	0

Public Health.

SMALL-POX IN SYDNEY.

The number of small-pox cases reported to the Department of Public Health, New South Wales, for the week ending January 10, 1915, was:—

	Cases.
City of Sydney and Metropolitan District	2

THE HEALTH OF NEW SOUTH WALES.

The following notifications have been received during the fortnight ending January 4, 1915, by the Department of Public Health, New South Wales:—

	Enteric Fever.		Scarlet Fever.		Dihp-theria.		Inf'ntile P'r'lysis.	
	Cs.	D'ths.	Cs.	D'ths.	Cs.	D'ths.	Cs.	
Metrop. Comb'n'd Dis.	18	3	63	—	60	1	—	
Hunter Riv. Com. Dis.	8	—	13	—	7	—	—	
Remainder of State	51	4	34	—	109	3	1	
Total	77	7	110	—	176	4	1	

The incidence of enteric fever throughout the State has diminished by approximately 25% as compared with the corresponding fortnight in 1914. In Broken Hill, nine cases were reported, and in Wellington five. The number of scarlet fever cases reported has increased very materially on that notified in the corresponding period of 1914. The largest number was reported in Cessnock, being 8, while 5 were reported in Lyndhurst and 4 in Condobolin. The greatest number of cases of diphtheria was at Broken Hill, where there were 29. There were 4 cases reported at Junee, and the same number at Lockhart.

INFECTIVE DISEASES IN QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, for the week ended December 19, 1914:—

Notifiable Disease.	Cases.
Enteric Fever	21
Diphtheria	27
Varicella	2
Phthisis	4
Erysipelas	1
Scarlet Fever	5
Puerperal Fever	2
Infantile Paralysis	6
Total	69

The following notifications have been received by the Department of Public Health, Queensland, for the week ending December 26, 1914:—

Notifiable Disease.	Cases.
Enteric Fever	19
Diphtheria	11
Varicella	1
Scarlet Fever	1
Cerebro-Spinal Meningitis	2
Total	34

The following notifications have been received by the Department of Public Health, Queensland, during the week ending January 2, 1915:—

Notifiable Disease.	Cases.
Enteric Fever	36
Diphtheria	28
Varicella	5
Phthisis	12
Erysipelas	1
Scarlet Fever	5
Total	87

THE INSTITUTE FOR TROPICAL MEDICINE, TOWNSVILLE.

Dr. A. Breinl, the Director of the Australian Institute for Tropical Medicine, Townsville, Queensland, has issued the half-yearly report for the period ending June 30, 1914.

A course in tropical medicine was planned for the early months of the year, but owing to the small response, the course was postponed for a year.

An extensive enquiry into the health and the general condition of the school-children in Townsville was begun in 1913. In order to determine the effect of climatic conditions

on the blood of children born and reared in North Queensland, a large number of analyses was undertaken. Complete blood-counts and hæmoglobin estimations were carried out in regard to 500 native boys and girls of ages between 5 and 15. The average number of red blood corpuscles was 5,076,900, which may be regarded as normal for children in temperate climates. The hæmoglobin content was found to average 12,485 grammes, and this, too, represents a normal content. In 150 school children, Arneth's count was carried out at the same time as the differential leucocyte count. The significance of sinistral asymmetry (Verschiebung nach links) which Dr. Breinl translates as "a shift to the left," in the Arneth index is not understood. This investigation showed that the proportion of neutrophile leucocytes containing one nucleus to those containing two was altered in a manner similar to that met with in persons suffering from infective disease. Dr. Breinl is of opinion that this change is effected by climatic conditions, albeit that no other evidence of blood changes due to climate have been discovered.

A disease named gangosa (Rhinopharyngitis mutilans), which is found in the Western parts of New Guinea, has been investigated. The disease is characterized by an œdematous swelling of the skin in the neighbourhood of the nose, leading to phagedenic ulceration involving the skin and the mucous membranes of the naso-pharynx. A parasite belonging to the genus Cryptococcus has been found in the serum gained from the lesions during the œdematous stage. This parasite has been called Cryptococcus mutilans.

In a number of children lead poisoning has been discovered, and their cases have been carefully studied from the clinical and chemical points of view. Six of these children were treated in the Townsville Hospital. One case of snake-bite was dealt with. Thirty-two cases of pathological conditions due to animal parasites, including 20 of ankylostomiasis and 10 of filariasis, were treated. Of the 69 cases of febrile affection, 35 were of the nature of enteric fever and three were malaria. In 15 cases the fever is described as indefinite. There were 3 cases of enteritis, 7 of sprue, 2 of dysentery, 3 of bronchitis, and 1 of tetanus.

A separate report of Dr. W. J. Young, of the work conducted in the Bio-chemical Laboratory contains interesting information. Dr. Young has investigated the intensity of the violet and ultra-violet rays in the sunlight at various points. A considerable amount of work has been undertaken in the study of the nitrogenous metabolism in a case of chyluria. The results of the experiments and observations will be published in the "Journal of Tropical Medicine."

An investigation has been undertaken of the general metabolism of white people living in the tropics. In the first place, the body temperature has been determined at various periods of the day. These observations were made during the hot season, when the wet bulb thermometer registered between 74° and 80°, and also during cool weather. It was found that in the morning both the mouth and rectal temperatures were below the average body temperature of persons living in temperate climates. As soon as the individual began to move about the rectal temperature rose, often reaching 100°, while the mouth temperature did not vary to a marked degree. The cooling down of the body was effected more rapidly during the cool season, when the air temperature and humidity are lower.

The next subject dealt with was the utilization of protein by the body. Complete analyses of the urine of four healthy subjects were made. The volume was found to be very much smaller than that excreted on an average in a temperate climate. The specific gravity was found to be higher, indicating a raised concentration of the urine. Less nitrogen is excreted in North Queensland than in temperate zones. Less protein, however, is ingested, and Dr. Young deduces from his experiment that the partition of the nitrogen products is very similar to that occurring in the urine of normal individuals living in temperate climates. The amount of phosphorus and sulphur excreted showed no deviation from the normal in temperate climates, but the amount of chlorine was slightly less.

Lastly, Dr. Young records some experiments conducted on the black pigment of the skin of coloured races. It was found that a solution of this pigment in alkali absorbed all the rays in the violent end of the spectrum as far as green.

Dr. W. Nicholl publishes a separate report on the microbiological work of the Institute. The result of a series of experiments led him to the conclusion that the employment of salt for the purpose of arresting the development of the eggs and embryos of the human hook-worm is not of practical value on account of the large quantity required to effect complete arrest. Experimental investigations on worm-nodules in cattle has been continued. Some account of his work on this subject has already been published in the "Medical Journal of Australia" (September 12, 1914, p. 245).

An investigation of the bacteria found in various mosquitoes was undertaken. One hundred and thirty-five mosquitoes, belonging to the following varieties, were examined: Stegomyia fasciata, Culicelsa vigilax, Culicelsa annulirostris, Culex fatigans, Culex tigripes, Mucidus alternans, and Nyssorhynchus annulipes. It appears that the bacteria isolated were chiefly of coccoid nature, but bacilli were also found. In no case was any pathogenic-organism met with.

The report on the bacteriological work is written by Dr. Henry Priestley. In regard to an illness clinically resembling enteric fever, cultures were made from the blood, fæces, and urine, and Widal's test was carried out. In one case, bacillus typhosus was isolated from the blood. In several others bacteria of the Salmonella group were found, but these micro-organisms differed in many respects from all other known bacteria. It has not been possible to determine up to the present time whether there is any causal relationship of these organisms to the disease. The Widal reaction was irregular, and only typical in a few cases.

Dr. Priestley has undertaken a bacteriological study of potable waters. The Townsville water has been shown to be of good quality, but interesting results are expected toward the end of the dry season. Special attention is being paid to the presence of bacteria, indicating recent or remote fæcal contamination. Some experiments are being conducted with a view of determining whether the action of sunlight was capable of converting bacillus cloacæ into a non-lactose fermenter. Other experiments have been carried out for the purpose of arriving at a better understanding of mutation in bacteria.

A number of pigeons have been fed on the various forms of rice obtainable locally, presumably after polishing. In no case has a disease analogous to beri-beri resulted. Dr. Priestley deduces therefrom that either the pigeons were refractory, or that the rice was unsuitable.

The report concluded with an account of the work undertaken in the Entomological Department by Mr. F. H. Taylor.

STATE CHILDREN IN NEW SOUTH WALES.

The report of the President of the State Children Relief Board of New South Wales for the year ending April 5, 1914, and dated October 29, 1914, has just been issued. This report is replete with information of great interest and value, and should be studied by all who are desirous of keeping themselves informed on the subject of the control of children by the State. The activity of the Board has been extended very considerably during recent years. Sir Charles Mackellar points out that a considerable increase in the expenditure of the Board has taken place, and that this increase is due in great measure to the amended regulation under the State Children Relief Act, 1901, which authorized the Board to grant pecuniary aid to widows and deserted wifes for the maintenance of their children. This amended regulation, together with the "Deserted Wives and Children Amending Act," which became law in October, 1913, and which empowers the authority to hand over to the families of certain prisoners a proportion of their earnings, has influenced the scope of the Board's activity. Originally, the Act only provided for the boarding-out of children with persons selected for the purpose, or in recognized institutions. In 1896 the Board acquired the power of boarding-out children with their own mothers, or, in other words, of paying to the mothers a sum toward maintenance.

The President recommended the appointment of a Children's Council, consisting of six members, of whom two should be medical practitioners, two magistrates, and two women. The medical members should be a specialist in neurology and a specialist in diseases of children. The duties of the Council should be the direction, supervision and control of dependent, neglected and delinquent children, and the direction of all institutions for the care of such children. Further duties should be the collection of maintenance contributions, the administration of affiliation work, the supervision of street-trading by juveniles, the administration of probation and other matters. Their powers should be in keeping with these duties.

In the account of the year's work, the various departments are dealt with separately. It will be impossible to enter into details of this work in the space at our disposal. The section, Children under Control of the State Children Relief Act, provides for the granting of allowance to deserving widows and deserted wives with children under 14 years of age. The term "deserted" includes women whose husbands are in gaol, in an infirm or destitute institution, and in a hospital for the insane or a general hospital, as well as women actually deserted. During the year, 10,665 children were dealt with. Of these, 5,970 were under the control of their mothers, and 4,695 were boarded-out elsewhere. These figures show a substantial increase as compared with the figures for the preceding year. It appears that 5.7 per 1000 of the total population were dealt with in this way. Children actually paid for represent a proportion of 4.9 per 1000, while the proportion of children kept with their own mothers was 3.2 per 1000. The expenditure in the year amounted to £132,385, of which £56,127 was spent on children's maintenance when they were boarded-out apart from their mothers. Evidence of the activity of the Board in the direction of making parents support their children to their utmost capacity is found in the fact that £4,598 was contributed by the parents and other relatives, or refunded. The total number of children under inspection by the Department was 13,891. These are grouped under the following headings: Placed out apart from mothers, boarded-out with mothers, in foster homes, in licensed institutions, engaged in street-trading, released on probation and employed in theatres. A large amount of information in regard to the result of the visits of the salaried inspectors is given in the report. Separate chapters are devoted to the children provided for apart from their mothers, to the applications for the custody of children, to the apprenticed children, and to the cottage homes for invalid children. It is again urged that proper training homes should be established, where a preliminary training could be imparted prior to the actual apprenticeship. In addition, the President is of opinion that the wages scale needs revision.

A full description of the farm homes at Mittagong, and of the babies' homes at Randwick, South Head and Croydon, is appended. In the latter, mothers and their infants are received, and the babies suffering from gastro-enteritis and other acute diseases are sent on to the Lady Edeline Hospital for Babies. The mortality in the homes has been low, the chief causes of death being meningitis, marasmus, and "heart failure." The total number of infants admitted into the three homes was 144, of which number 11 died.

The next sub-division of the report deals with that portion of the work of the Board directly undertaken for the purpose of preserving infant life. In this connexion, the whole question of the management of infants, and the treatment of children affected with infantile diarrhœa and tuberculosis is included. The final portion of the part of the report dealing with children boarded-out or otherwise provided for apart from their mothers comprises of an account of the work achieved in the Probationary Farm Homes at Dora Creek and Toronto, and the Home for Feeble-Minded Boys at Raymond Terrace.

The second part concerns the work carried out in connexion with children boarded-out with their own mothers. Sir Charles Mackellar points out that this term is a misnomer, and that what is really implied under this heading is that these mothers receive eleemosynary assistance, and not maintenance help in the proper sense of the term. The aim of the Board has been to stimulate the mothers and those of the children who are capable of earning to help themselves as much as possible. The Board is prepared to supplement these earnings or means by grants, according to the needs of the individual case. On the other hand, the amended regulation places this class of mother more or less on the same footing as the persons with whom children are boarded out apart from their mothers, and the maximum rates are payable. Some discussion is devoted to the wisdom of relieving the Board of a discretionary power of varying the rates. This determination on the part of the Government was contrary to the recommendations of the Board, which had expressed the opinion that the resulting extra expenditure was not warranted. According to the regulation, "the rates of payment shall be 7s. a week for every child under 3 years of age, and for every child of 3 years and under 14 years of age, 5s. a week." Elaborate statements are made with a view of demonstrating the unwisdom of the new policy of converting a "helping" allowance into a "maintenance" allowance.

The third part of the report deals with the activity of the Board in connexion with the Infant Protection Act. This measure, which was passed in 1904, provides for the supervision of the maintenance, education and care of children up to 7 years of age. The children affected are those which are placed in institutions apart from their parents. Two classes of homes are recognized: (a) those for the accommodation of not more than five children, and (b) those for a greater number. Twenty-one licenses under class (b) have been issued. Of these the Foundling Home at Waitara accommodates 100 children, and the Burnside Orphanages at Parramatta accommodate 75. During the year, 331 children were received in these Homes. Thirty-six of these children were under one year of age. In two of the institutions infants are at times admitted with their mothers. The number of deaths during the year in all the Homes was 29. Twenty-three children under 12 months of age, and 16 under 6 months, died. The health of the children, on the whole, was good.

The Department dealt with 85 affiliation cases, and in 64 of these orders amounting to £18 13s. 6d. per week were obtained. In addition preliminary expenses and past maintenance to the amount of approximately £180 were collected.

The fourth section of the report deals with the Children's Court. The duties of the Board in this connexion is an important one. The Court, being a special tribunal for dealing with neglected, uncontrollable, and delinquent children between the ages of 5 and 16, needs an authority which will continue the reformation work after the children pass out of its hands. Six hundred and ninety-one young offenders were dealt with. One hundred and thirty-nine were brought before the Court as neglected children, 311 as uncontrollable, 67 as breaking terms of probation, 11 under the Children's Protection Act as being under improper guardianship, and 163 for minor offences. The chief causes of child delinquency were found to be (1) parental carelessness, (2) evil effects of picture-shows, (3) the treatment as normal of all children attending schools, and (4) neglected religious training.

In the Metropolitan Shelter for Boys in Sydney, the Binet-Simon test is applied to all children with suspected mental physical or moral defects. This examination is carried out by the Superintendent, and a subsequent medical examination is effected by Dr. Andrew Davidson. It was found that 241 children were below the average in mental development. This number includes 6 imbeciles, 3 feeble-minded, 1 idiot, 3 epileptics, 1 deaf and dumb, and 1 insane. Fifty-three per cent. of the 579 children were found to need some form of mental treatment.

Three hundred and forty-four of the children were of average mentality, and 12 were above the average. Of the children on probation, 724 were stated to have behaved themselves excellently, 116 satisfactorially, and 87 unsatisfactorially. The period of supervision imposed was up to one year in 742 cases, up to two years in 155 cases, up to three years in 11 cases, and over three years in 18.

The last part of the report deals with the supervision of infants under three years of age placed in foster homes apart from their parents. In a large proportion of cases,

these children are illegitimate. They are subjected to inspection of four lady inspectors. The duty of these inspectors, apart from visiting the babies, embraces the controlling of advertisements in the daily press for the care and adoption of infants by private individuals. They also give advice in regard to the question of affiliation orders and maintenance allowances.

The report contains a very large amount of information beyond that referred to above. It is especially valuable in view of the fact that Sir Charles Mackellar has now retired from the presidency, and the report therefore forms a sort of summary of his pioneer work.

Vital Statistics.

VICTORIA.

The Government Statist has issued his quarterly returns for the State of Victoria, including the information concerning the movements of the population, and the data usually spoken of as vital statistics. The population of the State, exclusive of full-blooded aborigines, on September 30, 1914, was estimated at 1,430,878. The natural increase, i.e., the excess of births over deaths, was 5,193, while the gain of persons arriving by sea or land in the State over those leaving was 3,700. Of the arrivals, 4,317 came from Great Britain or from other parts of the British Empire; 267 arrived from foreign countries, including 77 from France, 39 from Italy, and 36 from Germany. One hundred and four persons left Victoria for Germany during the quarter ending September 30, 1914, 51 left for France, 30 for China, 22 for Italy, and 17 for Japan.

The number of births registered in the State was 9,460, and the number of deaths 4,251. No attempt is made to deal with these figures, further than to divide them into three groups of (i.) metropolitan, (ii.) other urban, and (iii.) rural districts. We are not informed what the corrected death-rate was, or how many of the persons dying in the State were usually resident elsewhere.

The causes of death are subjected to a fuller tabulation. Tuberculosis was the cause of death of 345 persons. In 295 instances the disease was pulmonary. The number of deaths from pulmonary tuberculosis in Greater Melbourne during the first nine months of 1914 was 49 more than that in the corresponding year of 1913. The number of deaths in 1912 was slightly higher, but the average for the past five years was between the figures for 1913 and 1912. In regard to other forms of tuberculosis, the number of deaths in the nine months up to September, 1914, was 19 less than the number in the first nine months of 1913. Cancer killed 303 persons, while diphtheria killed 58, morbilli 56, and enteric fever 8 in the whole State. Deaths from diphtheria in Greater Melbourne were slightly more numerous than in the corresponding quarter of 1913, while the number of deaths from enteric fever in the quarter was 4, as compared with 5 in the same quarter of 1913. The frequency of death from cancer in Greater Melbourne was higher by 28 in the quarter than in the same quarter of 1913.

The Statist gives an analysis of the causes of death in Melbourne, Ballarat, Bendigo and Geelong. In this analysis it is seen that organic diseases of the heart was responsible for 239 deaths in Melbourne, for 31 in Ballarat, for 14 in Bendigo, and for 21 in Geelong. Bright's disease caused 128 deaths in Melbourne, 4 in Ballarat, 5 in Bendigo, and 4 in Geelong. Deaths connected with pregnancy and the puerperal state, including accidents of pregnancy, puerperal hæmorrhage, other accidents of labour, puerperal septicæmia, puerperal albuminuria and convulsions, and deaths described as following child-birth numbered 31, 1 and 2 in Melbourne, Ballarat and Bendigo respectively.

VITAL STATISTICS OF SYDNEY AND NEWCASTLE.

The metropolitan returns of the Government Statistician of New South Wales for the month of November, 1914, reveal a highly satisfactory state of affairs. There were 1676 births registered, which is 148 less than the average number registered during the corresponding months in the preceding five years. The birth-rate per 1000 of population was 27.72, as compared with 30.19. The number of illegitimate births was only 109, as compared with 170. There were 533 deaths registered, as compared with an average of 680 for November during the period 1909-1913. The death-rate was 8.82, as compared with 11.25—a drop of nearly one-quarter per cent. The number of deaths of infants under one year of age per 1000 births has fallen from 93, which is the average for the past five Novembers to 64 in November, 1914.

In regard to the causes of death, with the exception of apoplexy and pulmonary diseases, all the other participated in the lessened frequency. Of the zymotic diseases, enteric fever caused 3 deaths, diphtheria 5, scarlatina 2, and pertussis 2. Tuberculosis was responsible for 41 deaths, including 25 from pulmonary tuberculosis. Cancer is stated to have caused 48 deaths. The distribution of the new growth was as follows: Stomach and liver in 19 cases, uterus, etc., in 6 cases, breast in 5 cases, peritoneum, intestines and rectum in 5 cases, lip and tongue in 4 cases, and other organs in 9 cases. Diabetes killed 6 persons, and death was ascribed to anæmia in 5. Apoplexy occurred 27 times with a fatal result. Among the fatal diseases of the circulatory diseases, organic disease of the heart was recorded 33 times, aneurysm 5 times and embolism and thrombosis 6 times. Among the registered causes of death affecting the respiratory system, pneumonia appears against 17 cases, and broncho-pneumonia against 11. Diarrhœa and enteritis affecting children under 2 years of age resulted in 39 deaths, and affecting persons over 2 years resulted in 13 deaths. There were 9 deaths from hernia and intestinal obstruction, and 6 from appendicitis. Under the heading "non-venereal diseases of the genito-urinary system," Bright's disease heads the list with 34 deaths, while acute nephritis caused 4. Eight deaths from puerperal septicæmia were recorded. Of the causes of death in early infancy, congenital debility, icterus and sclerema had been registered on 17 occasions, premature birth on 21 occasions, and injury at birth on one.

The number of births registered in the Newcastle district was 148, which is equivalent to an annual rate of 13.4 per 1000 of population. Fifty-seven persons died, which yields an equivalent annual death-rate of 11.88. Twenty of the 57 deaths took place in public institutions. The number of births and of deaths are below the mean for November of the previous five years. One death was due to influenza, and 1 from erysipelas, while none of the 3 patients suffering from enteric fever, of the 2 patients suffering from diphtheria, or of the 14 patients suffering from scarlatina, died. Tuberculosis was responsible for 1 death, cancer for 4 and acute rheumatism for 2. Five of the deaths were due to organic diseases of the heart, and 4 to senility. Eight persons died of diarrhœa and enteritis, of whom 7 were under 2 years of age. Six infants died of congenital debility, premature birth, or injury at birth. One death is recorded as a result of the effect of heat.

Personal.

Dr. George Allan has resumed practice at "Ardgour," 31 Smith Street, Summer Hill, New South Wales.

Dr. D. J. Burt, of Sydney, arrived in Auckland, New Zealand, by the "Maheno" on December 25, 1914. Dr. Burt is on a holiday visit to the Dominion.

Dr. Gordon has removed to 133 St. George's Terrace, Perth, Western Australia.

Dr. Macaulay has resumed practice at 631 Hay Street, Perth, Western Australia.

Dr. J. Sidney Pearson has commenced practice at "Braunton," 133 St. George's Terrace, Perth, Western Australia.

Dr. Matthew Lang has resumed practice at 102 Collins Street, Melbourne.

Dr. A. Marsack has left Auckland, New Zealand, for an extended visit to England.

Dr. Hedley Terrey has resumed practice at 209 Macquarie Street, Sydney.

Dr. F. Windeyer Traill has resumed practice at 183 Liverpool Street, Sydney.

Dr. Clive Shields, late of Meekatharra, Western Australia, has commenced practice at 25 Canning Street, North Melbourne.

We are informed that Dr. D. R. W. Cowan, of Rose Park, Adelaide, who was on a visit to England when the war broke out, has received a commission in the R.A.M.C.

Medical Appointments.

Dr. A. P. E. O'Leary has been appointed Medical Officer at the Minda Home, Brighton, South Australia.

Dr. Alexander Murray Drennan, of New Zealand, has been appointed Professor of Clinical Pathology at the University of Otago.

Dr. G. C. Campbell has been appointed Medical Officer of Health at Donnybrook, Western Australia, vice Dr. F. J. Elliott, resigned.

At a special meeting of the General Hospital Board of the Hobart Hospital, held on December 30, 1914, the various committees for the year were appointed. The members of the new medical committee are: Doctors Gregory Sprott, R. G. Scott, A. H. Clarke, W. W. Giblin, and Messrs. W. P. Brownell and G. Kerr.

Dr. J. E. Thomson has been appointed Acting Commissioner of Public Health for Brisbane, during the absence, on leave, of Dr. Moore.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenems sought, etc., see "Advertiser," page xiii.

Medical Officer, Department of Public Instruction, Vic.

Mental Hospital, Parkside, S.A.—Acting Deputy Medical Superintendent.

Births, Marriages, and Deaths.

The charge for inserting announcements of Births, Marriages and Deaths is 5s., which sum should be forwarded in money orders or stamps, with the notice, not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

CAMPBELL-SMITH.—On December 26, 1914, at Armidale, New South Wales, the wife of A. Campbell-Smith, M.D., C.M.—a daughter.

DEATH.

STOKER.—On January 3, 1915, at 14 Hertford Street, Mayfair, London, W. Ernest Wilson Stoker, F.R.C.S.I., aged 46. (By cable.)

Proceedings of Australasian Medical Boards.

TASMANIA.

The following person has been registered under the provisions of the "Medical Act, 1908," as a duly qualified medical practitioner:—

C. H. Smith-Hozier, L.M., 1871, L.K.Q.C.P.L., 1871, F.R.C.S., Irel., 1882.

Books Received.

THE HISTORY OF SMALL-POX IN AUSTRALIA, 1788-1908, by J. H. L. Cumpston, M.D., D.P.H., 1914. Melbourne: Albert J. Mullett, Government Printer; Royal 8vo., pp. 182, with maps and diagrams.

OPERATIVE SURGERY, Catechism Series, 1914. Edinburgh: E. & S. Livingstone; pp. 144. Price, 1s.

MEDICAL AND SURGICAL REPORTS OF THE EPISCOPAL HOSPITAL (Collection of Papers). Volume II, 1914. Philadelphia: Wm. J. Dornan; 8vo., pp. 427. Illustrated.

GENERAL MEDICINE: PRACTICAL MEDICINE SERIES, by Frank Billings, M.S., M.D., and J. H. Salisbury, A.M., M.D., 1914. Chicago: The Year Book Publishers; Demi 8vo., Volume I, pp. 388. Illustrated.

GENERAL SURGERY: PRACTICAL MEDICINE SERIES, by John B. Murphy, A.M., M.D., LL.D., F.R.C.S., Hon. F.A.C.S., 1914: Chicago: The Year Book Publishers; Demi 8vo., Volume II., pp. 618. Illustrated.

THE EYE, EAR, NOSE AND THROAT: PRACTICAL MEDICINE SERIES, by Casey A. Wood, C.M., M.D., D.C.L., Albert H. Andrews, M.D., and William L. Bellenger, M.D., 1914. Chicago: The Year Book Publishers; Demi 8vo., Volume III., pp. 366. Illustrated.

OBSTETRICS: PRACTICAL MEDICINE SERIES, by Joseph B. de Lee, A.M., M.D., with the collaboration of Herbert M. Stowe, M.D., 1914. Chicago: The Year Book Publishers; Demi 8vo., Volume III., pp. 232.

MEDICAL NURSING, by A. S. Woodwark, M.D., B.S., M.R.C.P., 1914. London: Edward Arnold; Demi 8vo., pp. 324. Illustrated. Price, 4s. 6d. net.

THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES, by E. R. Stitt, A.B., Ph.G., M.D., 1914. Philadelphia: Blakiston's Son & CO.; Demi 8vo., Illustrated, pp. 421. Price, $2.

Diary for the Month.

Jan. 16.—Northern Districts Medical Association, N.S.W., General Meeting.
Jan. 19.—New South Wales Branch, B.M.A., Council Meeting.
Jan. 20.—Western Australian Branch, B.M.A., Branch Meeting.
Jan. 20.—Western Suburbs Medical Association, N.S.W., General Meeting and Clinical Evening.
Jan. 22.—Queensland Branch, B.M.A., Council Meeting.
Jan. 22.—Central Southern Medical Association, Annual General Meeting at Goulburn, New South Wales, at 4.30 p.m.
Jan. 23.—Northern Suburbs Medical Association, General Meeting, at Hotel Pacific, Manly.
Jan. 26.—New South Wales Branch B.M.A., Committee Meetings.
Jan. 26.—Victorian Branch B.M.A. (Eye and Ear Section), Annual Meeting.
Jan. 27.—Victorian Branch B.M.A., Council Meeting.

Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
QUEENSLAND. (Hon. Sec. B.M.A. Building, Adelaide Street, Brisbane).	Brisbane United F.S. Institute. F.S. Lodges at Longreach. F.S. Lodges at Warwick.
WESTERN AUSTRALIA. (Hon. Sec. 230 St. George's Terrace, Perth).	Swan District Medical Officer. All Contract Practice Appointments in W.A.
NEW SOUTH WALES. (Hon. Sec. 30-34 Elizabeth Street, Sydney).	Australian Natives Association. Balmain United F.S. Dispensary. Burwood District F.S. Institute. Goulburn F.S. Association. Leichhardt and Petersham Dispensary. M.U. Oddfellows Med. Inst., Elizabeth Street, Sydney. N.S.W. Ambulance Association and Transport Brigade. N. Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Braidwood. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Mudgee. F.S. Lodges at Orange. F.S. Lodges at Parramatta, Penrith, and Auburn. F.S. Lodges at Wellington. Killingworth Colliery, Newcastle. Seaham Colliery No. 1, Newcastle. Seaham Colliery No. 2, Newcastle. West Wallsend Colliery, Wallsend.
SOUTH AUSTRALIA. (Hon. Sec. 3 North Terrace, Adelaide).	The F.S. Medical Assoc. Incorp., Adelaide.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to the "Medical Journal of Australia" alone, unless the contrary be stated.

All communications should be addressed to "The Editor," "Medical Journal of Australia," B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.